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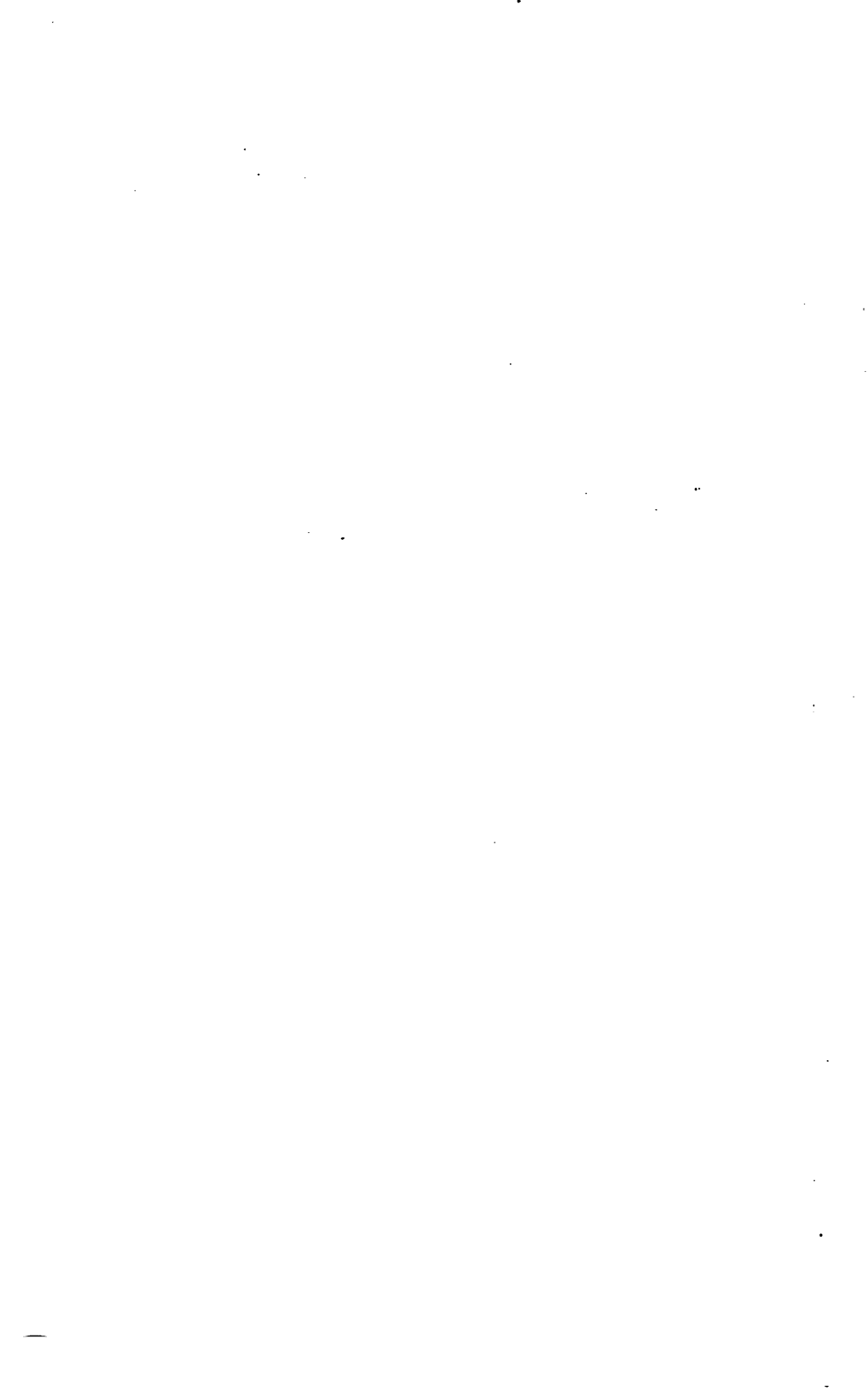


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# **AMERICAN PHYSICAL EDUCATION REVIEW.**

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# AMERICAN PHYSICAL EDUCATION REVIEW.

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## THE INSTINCTS AND EDUCATION.

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Superintendent of Schools, Springfield, Mass.

The ultimate origin of mind, like the ultimate origin of matter, is still an unsolved mystery and may forever remain such. It is not the purpose of this article to discuss this question, fascinating though it is as a field of speculation, but rather to trace the more immediate origin of the instincts, to indicate their nature, and to show briefly their bearing on certain problems of education.

The statement that animals are guided by instinct and man by reason is a commonplace of the older literature of psychology, and yet it is but a partial truth; and the usual corollary of this statement, namely that animals have instinct and no reason, and man has reason and no instincts, is wholly false. The higher animals must be credited with reasoning powers, and man has more instincts than any of the lower animals, although in a normal life they are overshadowed and controlled by reason.

Mind, like organic matter, no doubt is a product of evolution. This, at least, is the assumption of all modern scientific psychology. Just as the anatomist and physiologist must study individual organs of the body in the light of embryology, so the scientific psychologist must study the various mental phenomena in the light of the embryology of the mind; and to-day the profoundest problems of psychology are not problems of psycho-physics, but problems of genetic psychology. The theory of evolution is at present the working hypothesis in psychology.

As in organic evolution, while it is possible to explain why the fittest should survive, it is impossible to explain the origin of the fittest; so in the evolution of mind, natural selection, heredity, and perhaps use, may explain why a psychic function of advantage to the individual in the struggle for existence has been perpetuated and developed, but it cannot account for the first origin of such function. "Fortuitous" and "spontaneous" variation are the technical terms which still designate our ignorance of this subject.

The struggle for existence, reduced to its lowest terms, consists

of the struggle for the maintenance of the individual life and the struggle for the maintenance of the life of the species. The first is obviously fundamental to the second. Hence the first problem of the lowest organisms is to secure food and escape danger. Movement is therefore fundamental—movement towards food and movement away from danger; and in the study of instinct this fundamental character of movement must be constantly borne in mind, for unconscious "purposive" movement, no doubt, antedates consciousness.

Mind evolved because it became of advantage in the struggle for existence. Up to a certain point the perfecting of the body was all that was necessary to effect the movements necessary to maintain life. To illustrate, at first length of legs could effect the necessary speed to escape the enemy, but as increase in the length of legs and the strength of muscles also involves increase in weight of body, it became more effective, in the course of time, to add the psychic element of fear and thus make existing legs more efficient. The function of the psychic element was to intensify the movement. In like manner, strength of body, sharpness of teeth and claws, were for a time sufficient to destroy the enemy; but on account of the increase in weight it was more economical for nature to add anger, in the form of fierceness, and make the existing physical mechanism more efficient. It is a fact that in many instances the very architecture of the animal is a clear indication of its psychic life. Some animals protect themselves against their enemies by fleeing from them, others by destroying them; the former have long legs, wings, or protective covering, and are characterized by the feeling of fear; the latter have sharp teeth and claws and are characterized by the psychic quality of fierceness. A timid tiger or a fierce antelope would probably not long survive in a state of nature. This striking correspondence of psychic with physical qualities has led some writers to suggest that the psychic qualities are fundamental and bear a casual relation to the physical; but while this speculation is profoundly interesting, and is in harmony with much of the freshest current metaphysical thought, it must nevertheless be recognized that it is not a proved scientific truth, but only a hypothesis which at best has strong evidence against it as well as in its favor. To take animals as high in the scale as the tiger and the antelope to illustrate the beginnings of mind is, it must be confessed, to go "in medias res" in altogether unscientific fashion, but they serve to show the primitive function of mind as a means of intensifying movement, better than examples taken from the lower forms of life in which movement may be unaccompanied by consciousness.

The perpetuation of the species involved a series of movements

first to effect fertilization and secondly to feed and protect the offspring. These processes of nature, so vital to the very existence of animal life, were gradually accentuated as evolution progressed by the development of the feelings of sexual passion and of love of offspring. This reenforcement, which comes from the psychic element, became the more necessary in the higher forms of animal life because of reduced fertility. Animals which reproduce their kind by the hundred thousand or by the million can with impunity neglect their young; but animals which reproduce at the rate common among the higher animals would soon become extinct if it were not for the love of offspring which prompts them to protect their young.

Primitive psychic life, then, developed, no doubt, first in the form of feeling in connection with the movements necessary to maintain the life of the individual and the life of the species; and its function was to intensify these movements. Hence there arose the feeling of anger, of fear, of sexual passion, and of love of offspring. Together with these there developed also feelings in regard to which the ignorance of the psychologist reaches its maximum—namely those of pleasure and pain.

The order of mental evolution seems to have been as follows: Movement was fundamental; feeling developed to stimulate and intensify movement; intelligence developed to guide movement; and volition developed to determine movement in the light of remote conditions. *Feeling, intelligence and will*, and not *intelligence, feeling and will*, is the order of evolution; and this order, if I may anticipate, has a bearing on certain problems of education.

What is an instinct and what is the place and the function of instincts in this process of evolution?

There is no universally accepted definition of instinct; but I think we may describe it in a general way as an inherited form or mode of psychic activity which can be modified but little by the environment. Instincts are not psychic activities distinct from all other psychic activities, but they are rather identical with them. There are instinctive feelings, instinctive thought processes, and instinctive elements in volition. There are no instincts apart from these. The so-called "intuitions of the reason" are in their essential nature instinctive, for they are inherited and are almost unchangeable. The whole science of mathematics is based on the instincts of the reason. There are moral instincts which form the fundamental element in that complex psychic activity which we call the moral sense, or conscience.

If this is true, it follows that the instincts are fundamental in the psychic life of man as well as in the psychic life of animals; they form the most fundamental, the deepest, and the most unchanging

elements in human nature. As compared with the instincts, the human reason is only a light which can guide and direct, but not a force which can impel and move; and the ethical will is little more than a combination of the higher instincts controlling the lower, under the guidance of reason. The instincts, in other words, constitute the chief elements of character; it is the function of the reason to distinguish between the higher and the lower instincts, and that of the will to make the higher prevail. It is the office of ethical ideals and of religion to serve as guides and as sources of inspiration in ethical development.

It is a well established fact that the human body before birth passes through all the stages, with few exceptions, of the animal life of the entire series, from the unicellular organism to the fully developed human form. In passing through these various stages, organs functionally active in animals are also prominent in the developing human organism representing that particular stage. These are afterwards in part absorbed and contribute to the building up of other tissue. Later, other organs become prominent and are absorbed in similar fashion. If any of them maintain themselves permanently, the mature body is characterized by certain well-known deformities which may make it literally a monstrosity. Embryology has taught us the origin and meaning of all this.

As a result of this prenatal development, the normal human body is the bearer of some one hundred and thirty organs which are not functionally active and which are apparently useless. In view of this fact some one has called the human body an "old curiosity shop", containing many interesting but useless relics.

As already mentioned, the function of these rudimentary organs is to contribute to the growth of higher organs. It has been found that, although the tail of a tadpole is to be only a temporary organ, if it is prematurely cut off the hind legs will not develop normally. It is the function of the tail to be absorbed and to contribute to the development of the legs. Moreover, if the tail should by chance remain a permanent appendage the resulting frog would be a monstrosity, and would find itself seriously handicapped in the struggle for existence. It is this marvelous process of metamorphosis, by which, in the normal development, the lower is steadily taken up into the higher, that Victor Hugo had in mind when he exclaimed; "I am the tadpole of an archangel."

In like manner the psychologists are now endeavoring to trace the steps through which the individual human mind passes from the dawn of consciousness to maturity. In short, they are working at the problem of tracing the embryology of the mind. Just as there are rudimentary organs in the human body, so there may be rudimentary instincts in the mind. Just as the rudimentary organs

of the body are more developed in the early stages of its growth, so rudimentary instincts may be more prominent in consciousness in the early years of infancy and childhood than later.

Indeed, it is highly probable that there are instincts in the child's mind which dominate his conscious life and which have either entirely disappeared in the adult consciousness or occupy a wholly subordinate position. The sucking instinct may be cited as a case in point. Physiologically it is an inherited reflex, mature at birth; psychologically it is accompanied by a feeling of pleasure which amounts to a dominant feeling in the infant consciousness. His entire happiness depends on it. Yet this instinct passes away so early in life that no adult man or woman can recall that he has ever had it, or can realize how strong was the feeling of pleasure connected with the act of sucking quite apart from the taste of food. The instinct has completely dropped out of the adult consciousness. This early loss of instincts explains in part why we understand so imperfectly the nature of children. The man of three score and ten in whom the play instinct has long since been dead finds it impossible to realize why children should wish to romp and play and try his patience to the uttermost.

But not all instincts die early; many of them remain through middle life, and some of them stay with us to old age.

Most instincts are strongest in youth and they form the source of youthful temptations; but some of them are strongest in old age, like the love of money and the antipathy to new ideas, and form the besetting sin of the old man.

It would be quite impossible to enumerate even with approximate completeness the instincts which constitute our early psychic life. But a few may be selected as examples to illustrate some general truths in regard to them.

We are all familiar with the fishing and hunting instinct which is so strong up to middle life and often persists until the approach of old age. It is an instinct that was formed in prehistoric times when fishing and hunting were necessary as means of maintaining life. It was practiced for so many ages that it became registered on the nervous system and is transmitted by heredity.

There is the killing instinct, which is almost identical with it, and which was formed when killing was necessary as a means of securing food or as a means of self-defense. These instincts will probably grow weaker in the race as centuries come and go, just as they become weaker in the individual as the years pass by. The development of sympathy, and the altruistic group of feelings generally, will hasten the decay of these instincts. They have, in fact, already suffered decay in many minds to an extent that robs even hunting and fishing of their fascination; and there are not a few people who, if they were obliged to kill the animals



whose flesh they help to eat, would probably resolve never again to eat flesh while the world standeth. The time will undoubtedly come when the eating of any food which involves the killing of the higher animals will be looked upon very much as civilized man now looks upon the eating of human flesh. Indeed, we might say that, so far as food is concerned, there are at least three stages of civilization—roast missionary, roast beef, and vegetables. The human race has got as far as roast beef.

Then there is the fighting instinct, which was formed by our animal ancestors, and by our more direct forefathers who dwelt in trees, and who later lived in clans and tribes whose normal relations were those of war. This instinct was necessary in the days when food was scarce and the welfare of man required that the strong rather than the weak should survive and perpetuate the race. Might was right in those early days when there was not as yet, as there is now, any altruism to sacrifice; and when the highest interests of the human species required above all else that there should be developed a healthy body and a vigorous mind.

There is the instinct of possession, the predatory instinct, which is usually greatly reenforced by the fighting instinct, and which can be traced from the earliest struggle among the lower animals for food to the modern accumulation of fortunes. This primitive predatory instinct has been greatly reenforced in its modern form by many other instincts, but its essential nature has not been much changed.

How are these instincts to be treated in education? They form what has been known in theological literature as "original sin". But "sin", as implied in what has already been said, consists in the subordination of the higher instincts to the lower, more especially of the altruistic to the egoistic, and not in any group of lower instincts as such. All instincts and impulses are right in their place. What then is to be done with these so-called "lower" instincts in education? Three modes of treatment are possible:

1. We may try to crush them or root them out. This is what has been attempted—though fortunately seldom accomplished—in religious training in the past. This theory is that of stoicism and of puritanism. The Puritans objected to bear-baiting, as Macaulay said, not because it tortured the bears, but because it gave pleasure to the torturers. Pleasure as such was wrong. Perhaps a trace of this philosophy still remains with us in our faith in stomach *bitters*.

2. We may let these instincts grow wild, unchecked. This is the philosophy of Epicureanism—not indeed of the high, spiritual Epicureanism of Epicurus himself, but of that lower Epicureanism which is commonly understood by that name. More

frequently this mode of treating the instincts is not based on any philosophy at all, but is the result of neglect of training and parental care.

3. We may transform the lower instincts by lifting them on a higher plane, by putting them under the dominance of the higher instincts, linking them with the altruistic impulses and with the sense of duty—by hitching their wagon to a star.

This seems to be the mode of treatment pointed out by the evolution of the mind. The lower elements of psychic life, like the rudimentary organs in the body, are not destroyed or lost, but they are taken up by the higher forms and become integral parts of them. They are "absorbed", not dropped off. These instincts constitute the driving and impelling forces in our higher intellectual and moral life. They add a glow of interest to our ideals, they fire our ambitions, and they furnish the grit, nerve and energy that makes hard work a pleasure and renders it effective.

If you crush the fighting instinct, you produce the coward; if you let it grow wild, the brute; but if you link it with the higher instincts, you get the man of energy and force, the man of executive ability, of affairs. If you crush the instinct of possession, you get the pauper—who differs from the worthy poor not in that he cannot dig, but in that he is not ashamed to beg; if you let it grow wild, you produce the thief or the miser; but if you transform it by putting it under the dominance of conscience and the altruistic feelings, you develop the man of thrift, self-respect, independence and industry.

## CONDITIONS DETERMINING THE RAPIDITY OF THE PULSE DURING EXERCISE.

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The chief purpose of this paper is to show that the rapidity of the pulse during exercise depends to a smaller extent upon the quantity of work done than has been commonly supposed; and that speed of movement and resistance are factors requiring separate consideration, speed having much the greater influence on the pulse. Some other conditions that have been found to influence the pulse rate during exercise will also be mentioned.

Schmidt<sup>1</sup> says, "It is the quantity of muscle work done that defines the extra amount of work of the heart and lungs." Athanasiasu and Carvallo<sup>2</sup> make a similar statement, but neither of these writers gives any evidence to support it. Hermann Christ<sup>3</sup> observed that in his experiments the rapidity of the pulse increased in general with increase of work, "as was a priori to be expected." Staehelin<sup>4</sup> and Grünbaum and Amson<sup>5</sup> arrange their results in groups based on the quantity of work, and show a general increase of pulse rate as the work increases. Of all the writers on the subject whose contributions the writer has been able to find, Kolb<sup>6</sup> alone positively asserts a different view, viz.: "The frequency of the pulse is the higher, the more a muscle is strained,"—a view which attaches chief importance to the amount of resistance.

Not being satisfied that sufficient proof had been given in support of either of these views, the writer arranged a series of experiments intended primarily for another purpose so that their results would have some bearing on this point. In these experiments a continuous graphic record of the pulse and the respiratory movements was taken throughout the period of exercise and for a few minutes before it began and after it ended, thus giving an opportunity for a complete study of the changes in pulse rate resulting from the exercise.

The pulse was recorded from the carotid artery by means of two tambours connected by a tube. The essential difference between this apparatus and the forms employed several years ago by Marey<sup>7</sup> and by Edgren<sup>8</sup> consists in the application of an open

tambour directly against the skin over the artery without the intervention of any button or membrane, in order to lessen the disturbing effects of movements of the body upon the pulse curve. Records were taken during three kinds of exercise: riding a bicycle, running a foot-power lathe, and tapping a telegraph key. The bicycle was fastened firmly in position, the wheels removed, and the chain connected with a shaft carrying a heavy fly-wheel and also provided with a means of applying any desired amount of resistance. The purpose of the fly-wheel is to carry the pedals past the "dead point", so that the sensation experienced in driving the stationary machine shall not be unlike that occasioned by riding on a smooth road.

In the experiments mentioned, which were made by means of the bicycle, the speed and resistance were kept constant throughout each experiment, but the speed was varied in different experiments from 30 to 90 revolutions per minute, and the resistance varied between 4.5 and 18 kilograms; so that amounts of work varying from 71 to 852 kilogram-meters per minute were performed. The length of time during which the exercise was continued varied considerably in different cases, and therefore, to make the results strictly comparable, the highest pulse rate reached during the first five minutes of exercise was used for comparison in studying this particular question. When the speed and resistance were both the same in two or more experiments, the average pulse rate of the group was used.

Arranging the results on this basis we have 14 cases of bicycle exercise for comparison. Placing these in the order of the quantity of work per minute, and placing below each quantity of work the resulting pulse rate per minute, we have the following:

Work, 71 142 150 177 213 225 252 284 315 354 375 532 568 852

Pulse, 82 102 97 84 123 93 144 97 125 115 114 159 147 180

It is possible to notice here a general tendency of the pulse to become quicker as the work becomes greater. If, however, the quantity of work is the chief determining factor, the continuous increase in work should be accompanied by a corresponding rise in the frequency of the heart beat. We find instead that the expected rise in pulse rate occurs in only six instances out of a possible thirteen, while in one instance doubling the quantity of work (142-284) is followed by an actual decrease in pulse rate (102-97), and other exceptions almost as striking are to be observed. These variations cannot be attributed to individual differences, as all the experiments in this group were made on the same subject; external conditions were as nearly the same in all cases as they could be maintained. Such variations do not afford much support to the prevailing theory. Let us see if they can be accounted for.

The following table gives in compact form the conditions of work and the resulting pulse rates in the first nine bicycle experiments, in the order in which they were taken.

Resistance in Kilograms		4.5	11.25	18	Pulse rates per minute
Revolutions per minute	30	82	84	97	
	60	102	115	147	
	90	123	159	180	

By a glance at the table one can observe with what speed and what resistance a certain pulse rate occurred; for example, a pulse rate of 102 per minute was obtained with a speed of 60 and a resistance of 4.5 kilograms. It is plainly evident from the table that while the resistance was increased in greater ratio than the speed, the change in speed caused far more acceleration of the pulse. In the first line, for example, we see the effect on the pulse rate (82-84-97) of increasing the resistance while the speed remains constant at 30; in the first column we see the effect on the pulse rate (82-102-123) of increasing the speed while the resistance remains constant at 4.5. The greater effect of the change in speed is clearly apparent. Making similar comparisons in the case of each line and column of pulse rates given in the table, we find the pulse is quicker by 24%, 39%, and 52% when the speed is doubled (30-60), and by 50%, 89%, and 85% when the speed is increased threefold (30-90); it is quicker by 2.4%, 12%, and 29% when the resistance is increased 2.5 times, and by 18%, 44%, and 46% when the resistance is increased fourfold. That is, although an increase of resistance, when other things are the same, uniformly causes a quickening of the heart beat, an increase of speed under similar conditions causes a much greater change. It can be seen that in these instances the effect of doubling the speed was slightly greater than the effect of making the resistance four times as great.

This result, if it proves to be correct, offers a ready solution of the question raised above. The 142 kgm. of work, giving a pulse rate of 102, involved a speed of 60 and a resistance of 4.5; the 284 kgm. of work, giving a pulse rate of 97, involved a speed of 30 and a resistance of 18. The greater influence of speed, as shown in the preceding paragraph, is therefore sufficient to account for the result in this case.

Among 33 experiments made by the writer by means of the lathe, key, and bicycle, several other opportunities occurred for making comparison of the relative importance of speed of move-

ment and resistance, with the same conclusion in every instance. Whenever any two experiments were made on the same subject with such speeds and resistances as to give anywhere near the same quantities of external work, the case in which speed was the highest invariably gave the highest pulse rate. In ten experiments made on five different subjects, the telegraph key was depressed at a rate of five movements per second against a resistance of 40 grams, and then, at the same sitting, but after a rest, with a rate of one movement per second against a resistance of 1600 grams. Although the total external work was eight times greater in the latter instance, the more rapid work gave a higher pulse rate in every case, the acceleration being on an average double that given by the slower and heavier work.

The number of these experiments is not large, but as far as they go their verdict is so unanimous and so decisive that in the absence of any opposing evidence it is believed to be correct.

Another fact that is at least suggestive of the same conclusion is that by working small muscle groups at exceedingly high speeds we can obtain relatively high pulse rates with a comparatively small quantity of external work. In about 40 such experiments made on 20 different subjects, the exercise consisted in tapping a key as rapidly as possible. The subject was seated at a table with his arm resting easily upon it, and the tapping was done with the forefinger against a resistance of 40 grams and through a distance of one millimeter. The total quantity of external work required in tapping the key did not exceed 0.024 kgm. per minute, yet the pulse rate rose almost instantly to 90 or 100 on beginning to tap and fell quickly to the normal again on stopping. While riding a bicycle at the rate of 30 revolutions per minute we do not obtain so high a pulse rate until we increase the resistance to 18 kgm. or more,—in other words, to compensate for a reduction of speed to one-twentieth of the former rate, we must increase the resistance 750 fold. On the assumption that the essential factor in determining the pulse rate is the quantity of work done, these facts are not easy to explain.

The close relation observed by several writers between the pulse rate and the amount of work can be explained by the fact that in their experiments a change in the quantity of work meant simply a change in speed alone or in resistance alone. I can find no instance in all their results of a change in one of these factors associated with an inverse change of the other. Under such conditions it was of course impossible to notice any difference in the importance of the two and the consequent necessity of their separate consideration. In fact, none of these writers seems to have made a serious attempt to acquire any facts on this point; each started with a preconceived opinion, and merely took the

time to observe that his results seemed in a general way to bear out this opinion. The real basis of the theory that rapidity of pulse is determined chiefly by the quantity of work lies in the views formerly held as to what causes the change in pulse rate which accompanies exercise.

A theory widely accepted up to within the last fifteen years was to the effect that during exercise the greatly increased metabolism in the muscles results in an exhaustion of the supply of oxygen in the blood and the accumulation in its place of carbon dioxide; and that this change in the chemical composition of the blood is responsible for the faster heart rate<sup>1</sup>. Another theory having a large following until still more recent times is that during exercise there occurs such a wide dilation of the smaller blood vessels in the muscles that, to use the words of Lagrange<sup>9</sup>, "the blood is drawn toward the muscles", and that the heart beats faster as a result of the increased flow of blood. The belief in the dependence of pulse rate upon the quantity of work grew up naturally as a corollary of these two theories, rather than from any basis of fact.

The researches of the last twenty years have failed to substantiate either of these theories. The supposed change in the composition of the blood during exercise is found not to occur; on the contrary, under favorable conditions the blood is even better supplied with oxygen and more completely freed from carbon dioxide during exercise than during rest<sup>10</sup>. The great fall of blood pressure, resulting from the dilation of vessels in the muscles, which served as a basis for the second theory, was observed in the study of the effects of muscular work upon the horse, in one or two forms of work; but more recent observers agree that this does not hold true in the case of man, at least not with any uniformity. Again, if the rise of pulse frequency during exercise were the result either of a change in the composition of the blood or of the dilation of blood vessels, there would occur, between the beginning of the work and the beginning of the change in pulse rate, a delay which could not be less than 3 seconds, and which probably would not be less than 30 seconds; but the change in pulse rate begins instantly with the first movement made—the first heart cycle after exercise begins being quickened<sup>11</sup>.

Full details of proof regarding these questions cannot be given here; it is sufficient to say that, while much remains to be investigated, the mass of evidence points clearly to the conclusion stated by Johansson<sup>12</sup>, MacWilliam<sup>13</sup>, Athanasius<sup>2</sup>, and Hunt<sup>14</sup>, viz.: that the quickening of the pulse during exercise is largely due to nervous influences which arise in direct connection with the performance of muscular movements. It is well known that the heart is controlled by a nervous mechanism which regulates the rate and

force of its beat, and which consists of two nerves and the centers from which they arise. These centers are situated in the *medulla*, where they are subject to the influence of nervous impulses coming from all parts of the body. During exercise these centers are excited by a stream of motor impulses passing from the voluntary centers of the brain to the muscles, and another stream of sensory impulses passing from the muscles to the brain. The first and most important acceleration of the pulse is produced in this way; the presence in the blood of waste products of unknown composition, changes in blood pressure, and changes in the temperature of the body, probably help to increase the heart rate later, when the exercise is vigorous and prolonged.

Looking at the question from this standpoint, there is no longer any reason for assuming a relation between pulse rate and quantity of work done; on the contrary, the change in pulse rate is directly associated with the rapidity and intensity of the nervous discharge which initiates the movements. Increased resistance would be expected to increase the pulse rate, because it necessitates increased intensity of muscular contraction and consequently increased intensity of nervous discharge; the increased muscular tension would also cause the sensory impulses from the muscles to be more intense. Increased speed of movement would be expected to increase the pulse rate, because the cardiac centers are then under the influence of a more rapidly recurring stimulus. Here we come upon a property of nervous tissues which readily explains the greater influence of speed. A stimulus of a certain strength gives a certain response; repeat the stimulus after an interval and the same response occurs; repeat the same stimulus after a shorter interval and we get an increased response, because of the greater irritability of the nerve cells which resulted from the preceding stimulus and which has not had time to pass off. Because of this property of retaining an increase of irritability, rapidly recurring stimuli have a cumulative effect on nervous mechanisms, such as we have involved in the change in pulse rate during exercise. This principle is applied extensively in gymnastic exercise. The rapid and vigorous movements of Swedish gymnastics and of games are employed when a general stimulation of the system is desired; the slower Delsarte movements are used when a quieting influence is sought. In the celebrated Nauheim treatment for heart troubles the movements employed are also exceedingly slow. The Swedish theory of slow leg movements might receive wider acceptance if this principle were used in explaining their influence.

Besides the speed and resistance of the movements involved, several other conditions have been found to influence the rapidity of the pulse during exercise.



It has been shown by Christ<sup>3</sup>, Staehelin<sup>4</sup>, Kolb<sup>5</sup>, and Lango-voy<sup>15</sup>, that the physical condition of the individual has a marked effect upon the degree to which the heart is affected by a certain exercise. Sick persons and convalescents show much greater acceleration than those in normal condition; athletes in training show a much smaller change. The lessened muscular strength and increased nervous irritability of the one class, and the opposite condition in the other, may explain these facts satisfactorily, although other explanations may account for them in part.

Dehio<sup>16</sup> shows that age has a marked influence on the response of the heart to exercise. He finds that although a certain piece of work causes breathlessness more quickly in the old than in the young or middle aged, still the pulse is quickened much more in the younger subjects. Here also the condition of the nervous system, and the condition of the heart as well, probably occasions the difference in large measure.

Grünbaum and Amson<sup>6</sup> and the writer<sup>11</sup> have found that in case of vigorous work the pulse rate tends to increase as long as the work lasts; but this effect may not appear until the work has continued for several minutes, and is wholly absent in the lightest exercise, where the rapid rise of pulse rate at the start is the only one. The later increase in pulse rate is probably due to waste products or rise of temperature—but both of these causes need further investigation.

The position of the body, which has a marked effect on the rate of the pulse while at rest, also influences the rate during exercise. The reasons usually assigned<sup>15</sup> are changes in blood pressure and muscular work involved in the different positions.

Some other conditions, among which may be mentioned sex, temperament, and psychic conditions, probably have considerable influence on the rapidity of the pulse during exercise, but the writer has not been able to find any account of careful studies of these points.

To summarize, it may be said that the rapidity of the pulse during exercise is chiefly determined by (1) speed of movement, (2) resistance encountered, (3) condition of the individual, and (4) age. The duration of the exercise, the position of the body, sex, temperament, psychic conditions, and temperature probably have some influence also, but these causes need further investigation.

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PHYSICAL TRAINING IN THE PUBLIC SCHOOLS OF  
THE CITY OF NEW YORK

JESSIE H. BANCROFT

Many of the problems to be met by the director and teacher of physical training in the public schools of the City of New York, are incident to the enormous size of the organization. In 1902 there were 512 schools, a teaching and supervising force of 12,057, and a registration of 588,614 pupils,—as large a number as the combined populations of the States of Delaware, Idaho and Montana. To go through class rooms for two or three years in one's own city, seeing children by the hundred, the thousand, and the hundred thousand, and never the same face twice, gives one a new and impressive sense of the responsibilities of public education.

These children present all possible variations of condition as to nutrition, inherited tendencies, home surroundings, and other influences that tell upon physique. The well-nourished, beautifully-clad children of the wealthy districts present a striking contrast to the thin, anæmic, often misshapen and poorly-clad children of the poor. It is easy in the autumn to tell from the tanned or white faces which of these children have summered in the country, and which have been pent up in city streets to play upon cobblestones or asphalt.

The racial characteristics of all the nations of the earth here are to be found. There are districts where on Jewish religious holidays not twenty-five children out of 2,500 will be found in school. In other districts entire classes will understand no language save Italian. In yet other districts the school principal must have a German interpreter to talk with parents, unless he happens to speak the tongue of the fatherland. There are Russians, Turks, and Greeks, Chinese, Japanese, Cubans, and Filipinos. Were it not for the miracles wrought by the class teachers, the quick adaptation of the pupils themselves, and the thousands upon thousands of Americans, native born, as have been their ancestors for generations before them, one might doubt the hopeful prophecy of Dr. Lyman Abbott that we in this country shall some day be an English-speaking nation.

The physical conditions of the schools themselves present all possible variations. Some are in congested districts where the "skyscrapers" make cañons of the streets and shut out light and air; some are in open, sunny fields, overgrown with wild flowers

or market produce. Here are to be found some of the largest school buildings in the world, accommodating under one roof between three and four thousand children, the population of a good sized town: buildings that have shower baths in the basement, play grounds on the roof, and heating and ventilating plants costing upward of \$50,000. Under the same organic school system are typical country school houses, small wooden buildings of one or two rooms, set in fields, and heated by stoves. Between these extreme types, but still in the same system, is the homelike, cheerful school of the small town, having eight or ten class rooms, where things move more slowly, with less nervous strain, and less military discipline, than in the huge organizations.

From this varying material, and under these diverse conditions, the physical trainer is to take a share in building the physiques of future citizens, capable of resisting the adverse physical environment of the city, of enduring its nervous strain, and of meeting its competition in long hours of strenuous labor. This work has entered upon a new era in the New York school system. For the first time physical training in the various boroughs and groups of schools is to be blended into an organic whole. A new position, that of Director of Physical Training for the entire city, has been created, and Dr. Luther Halsey Gulick has been elected to the position. The present borough directors retain office probably with the title of Associate Directors. The material from which this organic whole is to be wrought is worth a brief summary.

#### ELEMENTARY SCHOOLS.

The existing provisions for physical training vary in the different boroughs which were consolidated to form the greater City of New York. In the elementary schools (primary and grammar), the longest-established work of a systematic character is in Brooklyn, where there are a director and six supervising teachers, making it possible to visit each class twice in the school year; in the boroughs of Manhattan and the Bronx there are one director and one teacher, and each class cannot be visited oftener than once in four years, though each school is visited once or twice a year; the Borough of Queens has one director and one teacher, the classes being visited in some instances weekly, and in others once a year; the Borough of Richmond has one teacher who visits each class once a month.

The time allotted to the subject in the elementary schools also varies at present in the different boroughs, from twenty minutes for gymnastics, exclusive of recess, to ten minutes for gymnastics during recess. Uniform requirements for all boroughs will soon go into effect. These will probably specify from fifteen to twenty

minutes daily for gymnastic exercise, and a similar period for organized games, to be played either in the class rooms or school yards, as facilities admit.

Much the larger part of the gymnasium work in the elementary schools is free hand, taken in the class rooms; in each borough, however, something is done with apparatus. Manhattan and Bronx have forty finely equipped gymnasiums in elementary schools alone; Brooklyn has four gymnasiums, but facilities for light apparatus on free floor space in twenty-seven other schools; Queens has several gymnasiums and provision in a number of other schools for light, movable apparatus.

#### HIGH SCHOOLS.

In the high schools of the various boroughs the present provisions for physical training also vary. The Manhattan and Bronx high schools being of comparatively recent organization, have each several fully and finely equipped gymnasiums, and each several special teachers. One of these buildings, the new Wadleigh high school for girls, has under one roof three gymnasiums and three special teachers for its three thousand pupils. The six high schools of Brooklyn, being housed in old and inadequate buildings, have no gymnasiums or facilities for proper physical training, though four teachers in the Girls' high school, and one in the Boys' high school, are making the most of class rooms and very limited yard space. In the Borough of Queens there is physical training in all of the high schools, the only adequate provision, however, being in the Flushing high school, where the work has been thoroughly established for many years, under a special teacher, and with an equipped gymnasium. The Borough of Richmond has as yet no high school buildings.

The time allowed for physical training in high schools by the uniform course of study for the City, is two periods weekly for each pupil, the periods being from forty-five to fifty minutes in length.

The equipment of the high school gymnasiums mentioned above, and the character of the work taken in them, is extremely varied. Some of them are typically Swedish in both of these particulars, some are typically German, and some are eclectic.

#### TRAINING SCHOOLS FOR TEACHERS.

There are in New York City, as a part of the public school system, two Training Schools for Teachers, one in Manhattan, and one in Brooklyn, in which a majority of the class teachers for the elementary schools receive their professional training. These training schools are supported partly by State appropria-

tion made to those training schools in the state which comply with the minimum requirements of a course of study, promulgated by state authorities. These requirements include forty hours for physical training, so that every teacher who passes through a training school in New York state must have devoted at least that amount of time to this subject. The Manhattan and Brooklyn training schools, however, go beyond the minimum requirements, and give to pupils the same time allotted this subject in the high schools, namely, two forty-five-minute periods per week.

The Manhattan Training School for Teachers has one special instructor of physical training, and the Brooklyn Training School has two.

In addition to this training of teachers in the city's own training schools, every class teacher who is licensed to teach in the city, wherever she may have been trained, is examined on her ability to teach physical training in the class room, as well as on other subjects.

#### TRUANT AND UNGRADED SCHOOLS.

The various grades and kinds of schools in the city system would not be complete without mention of the Truant school and ungraded schools, or schools for defective children, both of which come under the general department of regular day schools. The latter are undergoing a rapid development at this time and offer a most urgent and interesting field for physical training.

#### REQUIREMENTS FOR TEACHERS.

The standard of requirements for teachers of all subjects in the New York public schools is such as to insure the employment of well-trained and experienced teachers only. Every teacher employed must hold a license granted by the City Superintendent of Schools, after the applicant has passed an examination conducted by the Board of Examiners. Appointments are made from an eligible list composed in the order of standing in examinations, but latitude for appointments is given to the extent of a choice between the first three names on the list.

The scope of the examination for a license to teach physical training in the elementary schools includes a written examination in applied anatomy, physiology and hygiene, principles of physical training, including methods of instruction, discipline, and class management, active games and elementary principles of voice building. In addition there is an oral examination, consisting mainly of the conduct of a lesson with a class of pupils from the public schools. The examination for licenses to teach in high

and training schools covers the same subjects, but in more advanced form, and in addition there is for these higher licenses a written examination on the science of education. In all examinations ability to use correctly the English language counts heavily. No one is eligible for a license to teach physical training in the elementary, high or training schools who is below twenty-one years of age, or above forty if a woman, or forty-five if a man.

The age limits for Directors are twenty-five to forty for women, and twenty-five to forty-five for men. Applicants for all licenses have to pass a physical examination by one of the physicians of the Board of Education.

According to a by-law of the Board of Education, no married woman may be appointed to any teaching or supervising position in day public schools.

To be eligible for examination for license as a special teacher of physical training in the elementary schools the applicant must have the following qualifications:

(a) Graduation from a satisfactory high school or institution of equal or higher rank, or an equivalent academic training, or the passing of an academic examination; (b) the completion of a satisfactory course of professional training of at least two years in the special branch; (c) three years' experience in teaching such special branch, which three years must not include the two years devoted to professional training; or six years' experience as a class teacher teaching the special subject a satisfactory portion of the time, which six years may be inclusive of the years devoted to professional training.

To be eligible for examination for license as teacher of physical training in high schools, the applicant must have one of the following qualifications:

(a) Graduation from a college or university recognized by the Regents of the University of the State of New York, and not less than three years' satisfactory experience as a teacher or as laboratory assistant in secondary schools or in colleges. One year of satisfactory post-graduate work resulting in a degree may be accepted in lieu of one year of the required experience in teaching.

(b) Graduation from a college or university recognized by the Regents of the University of the State of New York, and two years' satisfactory post-graduate work in the subject in which the applicant seeks a license and in the science of education, and one year of satisfactory experience in teaching in colleges or in secondary schools or in the last two years of elementary schools, which year of experience must not be concurrent with said post-graduate work.

(c) Graduation from a college or university recognized by the Regents of the University of the State of New York, and five

years' satisfactory experience in teaching, at least two of which shall have been in high schools or in the last two years of the New York City public elementary schools.

(d) Seven years' satisfactory experience in teaching, at least two years of which shall have been in the last two years of the New York City public elementary schools; and the completion of satisfactory university or college courses in the subject in which the applicant seeks a license, and in the science of education.

(e) Graduation from a satisfactory high school course, or from an institution of equal or higher rank, and two years of professional training in the subject in which the applicant seeks a license; and four years' satisfactory experience in teaching such special subject.

The requirements for training schools are similar to those for high schools.

To be eligible for license as director of physical training, the applicant must have the following qualifications:

(a) Graduation from a college or university recognized by the Regents of the University of the State of New York; (b) graduation from a course of professional training of at least two years in the special branch that he is to supervise or teach; (c) at least three years' successful experience as teacher of such special branch.

#### MAINTAINING THE STANDARD.

After an applicant is appointed to a position in the schools, his or her license is renewed by the City Superintendent for two successive years, if the holder has done satisfactory work, and at the close of the third year of continuous successful service the license may be made permanent. As a basis for these renewals, and the making permanent of licenses, the City Superintendent depends upon special reports made by the special director, and endorsed by a Superintendent. The specific points upon which such reports are made are:

Ability to comprehend instructions.

Scholarship in special subject.

Skill in statement.

Skill in questioning.

Use of apperception.

Use of correlation.

Ability to assist class teachers [elementary schools].

Thoroughness in developing subject.

Use of objective illustration [training schools].

Thoroughness of drill [training schools].

Self-control and manners.

Use of voice.

Control of pupils.



Whether the license be permanent or temporary, every special teacher of physical training, like every other teacher in the school system, is reported upon every term (twice a year) as to teaching ability, scholarship, effort, personality and control of pupils. According to the instructions of the City Superintendent, scholarship in this connection means a full working knowledge of the subject to be taught; effort includes activity and zeal in actual class work, and effort in self-improvement in any direction outside of the classroom. This latter point is what has been called the "culture test", and serves as a leaven to raise the general standard of culture and to prevent teachers from becoming narrow and falling into a rut. Under personality is included neatness and appropriateness of dress, use of the voice, manners, sympathy with pupils, gentleness, cheerfulness, and decision of character. The only control of class that is accepted is that obtained through interest. Discipline through fear is not tolerated, and corporal punishment is contrary to the by-laws of the Board of Education—a punishable offense that may result in a fine or ultimately in dismissal from the service.

It may not be amiss to observe in passing that the moral effect of such marking of teachers as that outlined above is not solely upon the teacher marked. Such reports insure a close, personal knowledge of the work being done, on the part of the supervisory officer making the report. In a large school system this is a very important consideration, and one which might not obtain to so great an extent under simpler conditions.

#### SALARIES.

The salaries paid to physical training specialists, as to all other teachers in the New York City schools, undergo an automatic increase until a maximum amount is reached, with the proviso, however, that the teacher's service be reported as fit and meritorious. The approval of service for annual increase of salaries thus forms another report which has to be made upon each teacher until the maximum salary is reached. There is a difference in the salaries paid to men and women holding the same grade of license as shown by the following schedule for teachers of physical training:

	Years needed to reach maximum	Women	Men
Elementary schools . . . .	4	\$900 to \$1,200	\$1,100 to \$1,400
High schools. . . . .	11	1,100 " 1,900	1,300 " 2,400
Training schools. . . . .	11	1,100 " 1,900	1,300 " 2,400
Directors. . . . .	5	2,000 " 2,500	2,500 " 3,000
Director of Physical Training (for the entire city) . . . . .			4,000

## PLAYCENTERS AND PLAYGROUNDS.

In addition to the regular day schools, the city utilizes its equipment out of regular school hours for evening schools and evening playcenters during the winter, and for playgrounds and vacation schools during the summer months. There are at present 20 evening playcenters kept open the entire year, and during the summer of 1902 there were 150 playgrounds. Gymnastic work and games are the main features of these playcenters and playgrounds, and a very considerable proportion of the twelve hundred teachers carried on the payrolls is made up of special teachers of physical training. The playground and playcenter work is a peculiar branch unto itself, and requires for success very much of the spirit and basic ideas of settlement work. The evening playcenters and the vacation schools form a separate department of the public school system, being under the immediate supervision of one of the superintendents. They are thus entirely distinct from the physical training department of the regular or day schools, as from all others.

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Since the above article was written, the new organization of the physical training department of the New York public schools has been signalized by a reception and dinner of welcome tendered to Dr. Luther Halsey Gulick by the directors and special instructors of physical training in the public elementary, high and training schools of the city, a corps numbering at present thirty-six. As the first meeting of the largest corps that has ever faced an organic work in physical training, the occasion had a significance beyond its relations to local conditions or to individuals. As such it is worthy of record. Each member of the physical training department was privileged to invite a guest, and invitations were thus extended to a few of those engaged in physical training outside of the department who had been most closely associated with Dr. Gulick in his previous professional life.

Invitations were also extended by the department to a few of the highest school officials in the city. Among those present was the Hon. Henry A. Rogers, President of the Board of Education.

The dinner was given at the Hotel Majestic, on Saturday evening, February 28th. Covers were laid for seventy. Dr. Andrew L. Barrett presided for the programme which followed the dinner. This programme included an address of welcome by Miss Jessie H. Bancroft, and a response by Dr. Luther Halsey Gulick. Dr.

M. Augusta Requa responded to the toast "The Present," and Mr. Edward L. Stevens, Associate City Superintendent, was to have spoken for "The Future." Mr. Stevens was unfortunately ill and unable to be present. Letters were read from Dr. G. Stanley Hall, Dr. Edward Hitchcock, Dr. Thomas M. Balliet and others. The following report of the speeches is slightly amplified from an account in the New York *Commercial Advertiser*:

In welcoming Dr. Gulick, Miss Bancroft said:

*Mr. Toastmaster, fellow workers in the department of physical training, our guests, and our particularly honored guest, Dr. Gulick:*

It has been said of the Pilgrim fathers that when they landed on this continent they first fell upon their knees and then upon the Indians. While the circumstances are not exactly parallel, it seems but fitting that having come to the beginning of this new regime, we should make an obeisance to the new director before we—again fall to work upon our pupils.

The pleasure, Dr. Gulick, of voicing the welcome extended to you by this department, has been assigned to me. Fulsome praise, or adjectives of adulation, would be as distasteful in this place to you as they would be wide of the occasion, though for those of us who have worked with you in various organizations and capacities, they might not be difficult to find. The significance of the occasion, however, is too high and too serious for the lighter personal considerations. Of the many ideas that present themselves at this time, two stand out with peculiar emphasis. One is the great opportunity offered for the advancement of physical training; I mean by that its extension and growth in the city school system, and more: I mean also the opportunity offered for establishing more clearly and firmly the educational values of the subject itself. The other idea that stands out at this time is the pronounced and peculiar fitness for furthering such a work of the man who has been elected director of the department.

A word as to the opportunity.

We are here as the representatives of our subject in the various departments of this vast educational system. Like many others in the series of organizations combined for the Greater New York, we have heretofore been working in small groups, or as individuals, unorganized as a department. I believe that for each and every one of us the first cause of rejoicing on this occasion is that your coming means our subject is henceforth to be raised to the dignity of an organized department. It is singular, it is almost startling, to reflect that while we have all worked together, or met frequently, in the interests of physical training in gen-

eral,—in our New York Society, in our National Physical Education Association, in lecture courses, in conventions, and in many other ways,—we have never, until to-night, met in our capacity as workers in physical training in the New York public schools. As regards this mutual ground of professional interest, we have worked isolatedly as individuals, or in small groups. We have had the Manhattan high school group, and the Brooklyn high school group; we have had the elementary school group and the directors group; but we have never faced, as a united corps of workers, the one, related, organic problem, of the physical training, from the lowest primary grade to the college preparatory, of the five hundred thousand public school children of the City of New York.

This has never been done, because until the past year the school organization has not been such as to make possible a departmental relation in this regard between the boroughs, and we rejoice that as soon as it has become practicable the Board of Superintendents and the Board of Education have recognized the needs of this subject by creating this new position of Director of Physical Training for the entire city. Particularly do we rejoice that for this position a man has been selected who combines a large intellectual grasp of the situation with practical constructive powers. For years, Dr. Gulick, your work in the National Council of the American Association for the Advancement of Physical Education—in its early history and in these later years—your labors in the Association of Organized Work for Boys; as a member of the Board of Governors of the American Athletic Union—in these and many other ways, your work has shown a constructive power that balances the practical and the ideal and wins our trust.

Of the opportunity offered by the enormous extent of the school system, the varied conditions which it represents, and kindred phases of the subject, others will speak. I wish, however, to emphasize the fact that this new development in our department is singularly opportune. The material, physical conditions of the city itself are undergoing changes daily and hourly that intensify immeasurably the need for physical training. Every skyscraper that goes up; every bit of stone, brick, asphalt or concrete that is brought to us, by lessening opportunity for exercise, and by increasing the artificiality of the environment, make more and more difficult the integrity of physical development under city conditions. We all recognize this, and while doing our utmost to meet the situation, welcome every influence that shall strengthen and reenforce our efforts.

We do not believe, however, that the physical aspects of our subject, fundamental and important as they are, cover all of the reasons for our professional existence. We believe in these phy-

sical aspects; we are all working for them; we think the countryman was right when he said "this knowing so much it makes you sick isn't any better than being so healthy you don't know anything." But beyond this we believe in the positive educational value of physical training; we believe in its significance in psychological development, its relation to mental activities, to the training of the will and of other powers fundamental to character.

This phase of our subject is not sufficiently recognized even in the educational world. There are still many who think that gymnastics are only "a string of exercises;" a mere relief from other work; a species of recreation; a substitute for recess. We appreciate at its full value the strong support of those teachers and principals who recognize the higher significance of the subject. But our work needs and we need that this recognition should be extended and more firmly established. That the new regime means that is shown by the very facts of the creation of your position and of the selection of the incumbent for it; for you are taking office under a Board of Education and a Board of Superintendents that stand for the very highest educational value of everything they touch.

We welcome you, Dr. Gulick, especially because your labors and influence for years have emphasized these higher educational aspects of physical training. For years you have been one of the strongest forces in this country making for the dignity of the work, and commanding for it respect from the educational world. As Stedman said of Lowell, you have "the intellect that puts in motion the intellect of others."

It was from you that we first heard applied to physical training the recapitulatory theory in education—the idea that in his exercise, as in other ways, the child passes, in a general way, through the primitive stages of the race; or to state it differently, that those forms of muscular activity are most natural to a child which the race used in its early occupations—climbing, rowing, throwing, etc. This affords a clue at once to the muscular co-ordinations that should form a basis for gymnastic work. From you we first gained the idea that with certain muscles co-ordinations certain mental and emotional states were constantly associated—an idea that takes hold instantly upon the great, live question of interest with which we are all concerned. The significance of team work in boys' play, and the suggestion of a natural sequence, or order, in the plays of children—these are among the contributions which you have made to the philosophy of physical training. They have helped, and are helping, to afford an educational basis for the subject comparable to the principles that govern the selection and arrangement of material in other subjects. We count ourselves singularly fortunate in hav-

ing such an influence enlisted for physical training in New York City; singularly fortunate that we are to have the inspiration, the council, the leadership, of such a man.

This one great fact of the educational achievements and tone of your work for physical training, perhaps comprehends in its large scope and implications all else that I might say on the personal side of our reasons for sincerely welcoming your regime. There is one particular phase of this, however, that cannot pass unnoticed: I refer to the scientific temper and spirit in which your work has ever been done. By this I mean not only the sure foundation on classified knowledge of facts; I mean what is of even greater importance, the scientific spirit, the subordination of self, and self-exploitation to the general good—a spirit which in the end reacts to the largest advantage of the individual, as shown by your election to your present office;—a spirit so large that self-aggrandizement and small personal considerations fall away before it. I venture to think, Dr. Gulick, that we who are welcoming you to-night are not altogether unprepared to meet you in this same spirit. While I doubt not you will many times have cause to be glad that you come of a missionary family, because of the large draughts we shall make upon your missionary spirit, yet I think we who welcome you have already discovered in our work together in other organizations, that each one has particular distinctive abilities and combinations of qualities to contribute to a general work, which belong only to him or her as an individual; we have found that these qualities appear most strongly in the fullest and freest co-operation; in short, that such co-operation is one of the ways in which he that loseth his life shall save it.

And so, Dr. Gulick, because of all that you will contribute to the subject in our schools; because your coming reenforces and enhances the work of each and every one of us, giving added point and significance to the contribution which each may make to a coherent whole; because of your tried abilities and constructive power; because of the educational dignity and tone with which you have ever invested the subject; and because of the large and generous spirit which animates your work,—unitedly, and heartily, we bid you welcome.

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In responding, Dr. Gulick said:

*Mr. Chairman, Miss Bancroft, Friends:*

It is with embarrassment and difficulty that I respond to that part of the address of welcome that is personal. The intimate and cordial relations that have arisen through the associations of

years will, I am sure, prove to be but the earnest of what is before us. I have had respect and confidence in the physical training force of New York City public schools because of the power and self-forgotten earnestness which representative members of it have always shown in the affairs of our American Association for the Advancement of Physical Education. Were it not for my confidence in your body I should not have consented to the new relationship between us. I thank you for this expression of confidence and welcome.

As to the significance of our work I am glad to respond more at length.

Our work is pre-eminently one of the great problems of modern city life. It is easy to deplore the city; we long for the conditions under which our ancestors lived,—green fields, ample houses, noble fireplaces, direct contact with the fields and association with domesticated animals.

The city rushes; it seems never to rest. We call it a biological furnace. We speak of our cities as the breeding places of iniquity and blots upon the fair name of civilization; but this is a partial, a half truth; our faces must be turned to the future. Even if we grant all that has been said relative to the evil of the city, there remains a larger, deeper, and more far-reaching truth. Every great change, every step of progress, in the world's evolution leaves the great mass of us with our faces toward the past, deploring the evils of the new conditions to which we have not yet become adjusted. It is a glorious thing to live in this day and in this city.

This is the age of the city. The world's consciousness focuses in the city. Its life here has a significance and intensity which in past ages has been diffused and relatively unconscious. The city is focusing the world's consciousness. Last century less than 4 per cent. of us lived in the cities; now upwards of 60 per cent. of us live in the cities. More business can be done in one day now than could be done in a week a hundred years ago. The media for the transmission of news, for the extension of knowledge, all admit of more rapid life, larger life, and more compact life. Every new era in the history of evolution has meant readjustment. The readjustment of the human race to the city involves in many respects a larger readjustment, a greater crisis of human affairs, than has occurred since the dawn of history. A fundamental test of our civilization is as to whether we can live permanently under what are at present the abnormal and unnatural conditions of city life. Of all the great countries in the world it seems that the United States is to try, on the largest scale, and under conditions of the greatest freedom, the experiment, to demonstrate the kind of life which the world

is to live. The older countries of the civilized world seem to be bound by tradition so that the steps we take with ease and rapidity are there taken with pain and slowness. But conditions even in the United States are not equal. Many of our cities are still so young that work upon them seems to be practically ineffective. They are so plastic that nothing is permanent. Everything is in the flux. But this superb city in which we are living has passed beyond the stage of fluid adjustment. Or, to change the metaphor, it is no longer in the unconscious period of babyhood; it has reached adolescence. It seems as though the great lines for permanent life of this king city of our hemisphere are now being blocked out. Even on the material side, with tunnels and bridges, with parks and city architecture, with educational and social relations, all being either remade or readjusted, we appear to be in the condition—that critical condition—of settling the lines of future growth. This is the time, ours the generation, for the formation of material conditions and the development of social traditions which shall be effective through the long generations of the future. Our generation for the first time meets the city problem on a large scale. The answer which we give to the problems propounded to us by the conditions of the city are to be measurably the answers which shall determine the character of our civilization. If the United States is the most significant country, and in the United States our New York City is the most significant city, then the privilege of here and now working out a fundamental problem is a privilege of the ages.

Gerald Stanley Lee has called our attention to the significance of making the city beautiful that it may adequately express the superb life of the day. It is my privilege to-night to call your attention to the potentiality of the city with reference to the maintenance of superb health, to the development of a higher type of manhood and womanhood,—a type having greater power, a type having a more intense and powerful personality. If it is true that man's personality has ever corresponded to the increasing complexity of his environment, then the type of personality which will ultimately be developed by the city will be largely more complex, more powerful, and more healthy than any personality which has been produced in the world so far. Our faces are toward the future, not the past. The past was good; the future is better. The evil of the city is temporary; the good is permanent. The evil of the city is a problem for solution; the good of the city is a power for mastery. The city represents opportunity, such opportunity as is new in the world's history. The consciousness of the world, the moving spirit of the *Zeitgeist*, seems to be focused and epitomized by this great, ugly, beautiful, patient, irritable, majestic, magnificent city.



It is our function to help answer the question as to whether human kind can permanently maintain the higher, faster, psychic level and pace of city life. Those of us who are working at this problem may be divided into three groups:

1. Those who are concerned directly with the cure of disease,—our body of physicians, a strong, able, numerous, well-equipped class,—they are doing noble work. To cure disease is dramatic. It always has and always will command the immediate attention of the world. But it is, on the whole, a mending process, a patching process, by which existing machines and boilers may be induced to go on somewhat longer and work.

2. The second class is composed of those who are concerned with the prevention of disease. These persons, these boards, are concerned with the purity of our water supply, the prevention of the spread of contagious diseases, the exclusion from our city of foreign sources of disease, the securing of pure food supplies, and the like. Their work is great. It has already in civilized lands largely prevented the disease scourges which have decimated whole peoples in former times. Even such tragedies as that now occurring at Cornell are trivial as compared to those which have swept Europe during previous ages. This work of preventing disease is less dramatic than that of curing disease, but is more fundamenal, more profound. We all of us know, nevertheless, of people for whom these two classes of agents have done all that is possible. They have no specific disease to be cured; they are surrounded by the wall of protection with sufficient care and thoroughness, so that they are not exposed to the ordinary sources of disease, still they lack power and vitality. The fundamental conditions of life are somehow not adequately met. Their lives are dominated by the necessity of caring for themselves; they have but little energy for work; they are unable to rear strong offspring, or in many cases any; they are liable to be upset by any and every irregularity in their course of life; they lack power; they lack vitality; they lack the power to live full, rich, effective lives.

3. The third class of persons to which I refer are those who are engaged not in the cure of disease, directly, but whose work consists in developing within the individual to the maximum the power of life, treating each individual, so that his may be the conditions under which the greatest power of living shall be developed. Theirs is a work of biological engineering. The city has presented new problems to this class of engineers. The sewage system, the elevated railroad, the tunnels, the buildings of the city, have all presented fresh problems to our mechanical and civil engineers and architects. New conditions have had to be met. And so with those of us who are concerned with the foun-

dation of human life itself, the city presents new conditions. These conditions have taken away the world's muscular work and are doing it by machinery. In the United States there are ten and a half horse power, steam power, for every man of us, and yet it is through muscular work largely that the muscular strength of the men of the world has been in previous ages developed. How long will that muscular health and power which has been developed in connection with muscular labor be maintained without such labor? How many generations can we live without doing this muscular labor? The records of older cities, of Paris, London, and Berlin, seem to show that three generations of city life are sufficient to exhaust the strongest stock.

Coincident with this taking away of the world's muscular work, we have increased many avenues for nervous expenditure. The news of the world is brought to our doors daily, almost hourly, by the daily press, steam and electricity. Our hearts throb with the passions of the whole world; action is immediate and necessary; consciousness is intense. These conditions we who are concerned with the maintenance of health must face in a new way. Individuals must come into the world's work with strong, enduring natures. That is, the period of childhood and youth must be so administered that the maximum power and health shall be developed. As Superintendent Maxwell so well remarked at the dedication of the Wadleigh High School, "It is not sufficient that the boys and girls of our high schools shall graduate without breaking down; they must graduate with a maximum of health and power for the world's work." There is no other subject in the whole curriculum so basal as this. In fact, it is not difficult to show that all of education is worth but little, if it is won at the sacrifice of health. The primary condition for success in business, in the professions, or in life itself, is not the knowledge which comes from books. The primary element is capacity for intense, prolonged work, and this is related primarily to health. It is not a question of how time may be found in the curriculum for physical training, but a question of what time is really necessary to be taken for physical training, and the adjustment of the rest of the curriculum to this.

It has been demonstrated beyond peradventure of cavil that muscular exercise adequate in kind and suitable in quantity is one of the fundamental conditions to physical health and power. During the past ages of the world children have secured muscular labor by play and by co-operating in the work of their parents. It is no longer possible for boys and girls to get adequate exercise in the original way, doing chores about the country farm, co-operating with the father as a laborer, and in work about the home. That no longer suffices. The chores of the world

can no longer be used as muscular exercise for the boy; and assisting in the domestic work of the house is no longer an adequate source of muscular exercise for the girl. The conditions under which the great traditional plays and games of the world have been developed have also changed. Hide and seek, tag, ball games, swimming, running, and the like, all demand ample space for their adequate development, and the city lacks space. Even where there is time, our city children are not in possession of plays and games which are adequate for physical development under said conditions. The city brings large numbers of children together. This in itself produces social friction and expenditure of power.

We have seen thus far that with the development of the city we need a higher type of man, keener and tougher,—a man who constantly lives at his best, who is able to fix all the powers of his being on intense effort, a man who lives finely and well. We have seen that this power must be developed during the growing period of life. We have seen that the city conditions have taken away the chief elements which have been of service in the history of the world in developing this vital power in the young. It is now our problem as biological engineers to face the situation, to show what needs to be done and to carry it out that our children shall, under the conditions of city life, not only maintain the average health of the past, but become stronger and finer children than the world has ever seen before, children who as men and women will be adequate to the superb opportunities of the city of the future. This is not the occasion for any complete discussion as to the details in the treatment of this problem in biological engineering. Its five main lines may perhaps be briefly referred to.

Our first proposition is that children of the city are without much necessary muscular exertion and without opportunity or incentive toward much voluntary muscular exercise through adequate plays and games. The first necessity, then, for us as physical trainers is to provide for the development and fashioning of out of school play and games that shall engage large numbers of children, which shall be as interesting as the traditional games of the past have been, which are as adequate for the development of the body as the old games were, and which shall be feasible under the conditions of city life. Our primary dependence upon general muscular exercise can never be in enforced gymnastics. A careful watching of a day's average play of a boy or girl under normal conditions indicates that two, three, or even four hours per day of active exercise alone is adequate, and to have this amount of exercise as formal gymnastics is wholly out of the question. Gymnastics can never take the place of play, and upon play we must depend in the future, as we have in the past, for

the fundamental conditions for the development of organic life and power.

Second, children sit at the school desks approximately five hours per day. Sitting, and particularly writing and reading, is biologically abnormal and tends to the induction of positions of the body which restrict circulation, respiration, and assimilation, the three fundamental biological processes. The school desk seems to be necessary. It must be met by frequent breaks throughout the school day, when the individual will rise, will vigorously exercise the muscles which counteract the desk attitude and which will at the same time increase the circulation and respiration.

Third, in order to develop conscious control of the body, the maintenance of good position of the trunk, a large part of the time for exercise during the school day must be given to those forms of formal gymnastics which are distinctively educational in their character, which shall progress from year to year in their educational demands, which shall secure that prompt response of body to mind, that immediate control of all parts of the body as well as that organic vigor which we have seen to be connected with such gymnastics.

Fourth, there must needs be throughout the day one or more brief periods given completely to mental relaxation. Gymnastics involve as keen if not keener conscious attention than any other form of education, and to substitute gymnastics for recreation is to make a fundamental mistake. The old-fashioned recess no longer gives the old-fashioned recreation. The large numbers of children engaged at a time, the limited space available for their play, their lack of games suited to their conditions, make the recess of doubtful value under present conditions. Accordingly, a definite part of the program of the future will be to provide such plays and games as are suitable under the conditions of the city school which shall be genuinely play, but the traditions of which shall be carried out by the teachers. In suitable communities there always arises a group of play traditions adapted to the environment of that community, and these traditions are passed from generation to generation of child life. But the conditions of cosmopolitanism in New York, of newness in environment, have not yet permitted the development of these games, and where some have been partially solved the size of the city prevents their rapid spread throughout the city by the personal contact of the players. Hence, it is imperative that there be some more adequate means of social tradition for these plays and games than is afforded by the children themselves. Organized plays and games for mental relaxation available under the conditions of school life, both temporal and special, seem to be an essential part of our necessity.

And lastly, there are no average children. Children, like adults, are all individual, and excel or are weak in specific qualities.

But within certain well-defined lines, children between certain ages work together readily. They keep step in physical, mental, and moral progress in the main. But there are always individuals who depart so far from this normal and ordinary rate of progress that it is prejudicial to them, and also to the others from whom they differ, to make the attempt to keep step. Some with exceptional speed and power can outstrip their fellows. Others, because of congenital peculiarity, or because of the tragic condition of their early lives, are deficient. These need segregation and that emphasis upon physical health and physical education which Seguin, Wey and others have so amply demonstrated to be a primary condition to the most wholesome development of these individuals. To co-operate in the segregation and training of these individuals that they may, so far as possible, ultimately come into condition for self-support must be a definite and important part of the work of this department.

What is the chance of success with reference to this which seems to us so important and fundamental a part of the educational curriculum?

(1) I would mention the great interest which there is all over our land to aid in matters of physical training. This interest, while it has its waves and its superficial indications like that of the eruption of correspondence schools of physical training whose wane we are already beginning to see, is appreciated most profoundly by the large men of our times. There is a present conception of the fundamental importance of physical health and power among the thinking men of our land, and this has penetrated pretty well into popular consciousness. This affords a background of public opinion upon which our work may adequately rest.

(2) But this conviction as to the importance of our work would not be effective except as expressed in some definite and organized way, and we count ourselves peculiarly fortunate in coming into this work under the administration of the present Board of Education and the present President of the Board of Education, Mr. Rogers, who for long years has indicated his belief and personal interest in the cause by effective service in connection with that great athletic institution, the New York Athletic Club, a man and a Board of Education upon whom and which we may confidently depend for the realization of all wise measures for rendering effective the special work that has been committed to us.

(3) And thirdly, our superintendent of schools and his associate board. A more vigorous or intelligent appreciation of the need of physical training could not well have been given than in that address (already referred to) made by our honored chief at the dedication of the Wadleigh High School.

(4) The immediate promise of success, however, and the final promise and test of our power (for all these others can only give support), lies in the power of those who are professionally engaged in this work; and here I speak with the greatest confidence and freedom. Because of the entrance requirements the body of men and women who have come and are coming into the physical training of the public school system of Greater New York enters under conditions of more careful selection, of larger experience, more general education, of more and better technical education, of more general culture, than that of any body of so large proportion that has hitherto been connected with the development of physical training. If this superb group of men and women can come into an organic relation, not for the cause of physical education, but for the advancement of the health of the children of New York City; if we can really pool our energy, our experience, we shall do new work in the history of the world, we shall make a pattern which will be of wide and permanent significance. Our relations will be those of mutual confidence and steady growth toward common aims and uniform methods,—uniform because of agreement as to what is best rather than because of legal requirements. We shall work together as a team rather than as a group of unco-ordinated individuals, as a team working together for the joy of the work, with that confidence and power which comes from mutual knowledge, and trust based upon mutual knowledge. We shall work together in that way where the individual thinks not of himself but of the advancement of the work, and yet in which the individual is glorified by the very success and advancement of the work.

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Dr. M. Augusta Requa, in responding to the toast "The Present," said:

*Mr. Chairman, Our Honored Guest, Guests, Fellow Physical Educators:*

Have you noted the recent demand made upon the modern pedagogue? A demand that is daily increasing. Is there any affair in the school world to be considered, then what immediately becomes essential to the furtherance of that affair? Why it is absolutely impossible to proceed without a dinner! Now these essential, pedagogic dinners call for great gastronomic powers. No longer can we hold the development of the intellect as a factor by itself. The dinner, a dinner, is a necessity, for upon the dinner depends the intellect. No dinner, no intellect! "Lord Brougham hoped to see the day when every man in the United Kingdom could read Bacon. 'It will be much more to the purpose,' said Cobbett, 'if his lordship would use his influence to see that

every man in the United Kingdom could *eat* bacon.' " I hear that the City Superintendent contemplates taking steps to make this a possibility in our city. But this is a question of the future and perhaps we shall hear something of it from the next speaker.

"If aught in the history of the world's blindness could surprise us," its practical attitude towards physical education in the past might indeed make us "pause and wonder." To-day the outlook is far more hopeful than ever before. All institutions from kindergartens through universities provide for it. Schools of high standing have been established to prepare trained experts in this important branch of education. Boards of education, boards of superintendents, place it in the curriculum. School architects look after the ventilation, light, color of walls, furniture and sanitary conditions. The Board of Education employs physicians to ascertain the health of applicants who desire to teach in its schools. The pedagogue is trained in genetic, physiological and descriptive psychology and hygiene in its threefold divisions,—public, school and personal. We have playcenters, vacation schools, swimming baths and many other aids to health. And now the subject is still further advanced by the appointment at the head of the department of physical education of Dr. Luther Gulick who is so eminently qualified to lead us to higher things.

Dr. Regua then spoke of the first introduction of physical training into the New York schools, and gave a résumé of the character of the present instruction, the gymnastic equipment of the schools and the time devoted to the subject in the curriculum. Proceeding, she said:

What is needed is more knowledge of the importance of the subject on the part of the laity, also more time, more trained experts and more joyous spontaneous physical activity.

The Chinese take a great interest in names, and when any one presents himself to them, they first examine the meaning of his name, and grant him honor accordingly. Let us look at the name of him whom we welcome to-night. The first syllable "Gu" is evidently an anglicizing of the Chinese "Choo" which means "Master." In my researches for the origin of the syllable "lick" I was beset with a number of difficulties. While it has a pedagogic significance, yet it surely must be classical. After due deliberation I am firmly convinced that it is a modification of the name "Ling" and "Ling" stands for "Scientific gymnastics". We may then rejoice, for "Gulick" becomes "Choo-ling" or The Master of Scientific Gymnastics.

May this night be the beginning of giving to the physical side of life the full attention that it needs. The President of the United States is a fine example of a sound mind in a sound body. May we as a nation become superb in physique, intelligence and character.

## THE VALUE OF FORM IN GYMNASIUM WORK.

H. F. KALLENBERG, M.D.

The term "form" is here used in the same sense as the terms "good form" or "graceful muscular action". The term "muscular co-ordination" indicates, perhaps, more comprehensively and more significantly what is meant by "good form". By muscular co-ordination we mean that form of action which enables an individual to accomplish any given movement, no matter how simple or how difficult, with the least expenditure of nervous and muscular energy; or, in other words, the co-ordination in time, space, and force of muscular contraction. This in its final analysis is "good form".

Awkwardness is contrary to every statement thus far made. An awkward individual fails to contract his muscles at the proper time, fails to produce the proper degree of muscular contraction, and fails to confine the muscular contraction to those groups of muscles needed, but brings into play other groups of muscles whose contractions defeat the efforts and object of the individual. This results in wasteful effort; i. e., in a loss of nervous and muscular energy.

We watch an accomplished gymnast perform with apparent ease the most difficult movements, and are so lost in admiring the graceful picture that we fail to note the fine adjustment of muscular action involved in the rapid evolutions of the body. To appreciate the value of "form", one must keep in mind the educative (psychical) processes which take place during the execution of a new exercise. In learning a new movement the higher mental faculties are brought into play until the exercise has been mastered and its control relegated to the lower nerve centers; in other words, until it becomes an automatic action demanding very little if any attention or thought on the part of the performer. This enables the individual to give his attention and thought to the mastering of new and more difficult exercises. Of course, these processes take place in all neuro-muscular activity. The important fact, however, is that new habits of action are formed and old habits are confirmed with every muscular contraction, no matter what its nature may be. To form new or to confirm old habits of bad action results in awkwardness, which means that the nerve centers involved will misdirect the efforts of the individual. The importance of educating the motor-nerve centers to correctly direct muscular action becomes at once apparent.



The character and rate of progress in muscular co-ordination depend upon the character, the completeness, and the time it takes for the establishment of the psychical processes mentioned. With practice the time required for the completion of these nervous processes is reduced, and there is also a more complete relegation of the work from the higher to the lower nerve centers, which, if properly trained, will result in greatly improved muscular action, making future progress in muscular co-ordination easier, more rapid, and more complete. The psychical processes involved in the execution of the simplest movements are complicated, even were no mental processes at work other than those necessary for the execution of the exercise. Such simple conditions are rarely present during the first attempts in executing new movements because the element of courage and confidence is present in greater or less degree, depending upon the character of the exercise. Those who have had experience in learning new movements will recall the peculiar emotions which arise on such occasions,—the hesitating attitude and faltering step as the apparatus is approached, the clenching of hands, the setting of the jaws, and finally the mental victory when with determination the attempt is made even though fear and doubt still linger as to the ultimate outcome of the attempt. It is as if a bomb had been exploded among the central nerve centers, causing disorder. Indeed, some of these first gymnastic attempts result in grotesque movements, the disordered motor nerve action producing inordinate muscular action. To whip the nervous system into line under such circumstances, to make the motor nerve centers act properly, and finally to become master of the situation, is possible only after an intelligent application of perseverance and pluck.

Many battles are fought between "order" and "disorder", and each battle won by "order" makes more possible the fine adjustment of muscular action seen in the movements of an accomplished gymnast. Shall we limit the benefits resulting from such battles won to the neuro-muscular life of the individual, or are we assuming too much if we say that order and co-ordination of the neuro-muscular apparatus assist in producing order and co-ordination in the higher mental activities of the individual? A man who has the pluck to do exercises that demand physical courage is very likely to possess that type of moral courage which fearlessly decides for the right questions concerning moral, political, and other issues. We believe also that grace and accuracy in performing physical exercises will do much toward stimulating neatness in personal appearance. It is uncommon to see a good gymnast dressed in a dirty or slouchy gymnasium uniform. Orderliness and cleanliness are boon companions of gymnastic "good form".

Good form is also valuable from the standpoint of animal mechanics. To keep the legs straight and the toes pointed is, in many cases, absolutely necessary in order to execute a given exercise. It also assists greatly in getting the proper swing of the body, in shifting properly the weight of the body, keeping it close to the power and balanced about the point of support. Gymnastics should produce the proper, erect position of the head and shoulders, and this is possible only when the correct position of head and shoulders is maintained in the execution of exercises.

Finally, "whatever is worth doing at all is worth doing well". There never was a time in our history when this old saying needed to be revived and emphasized so much as at the present time. To cultivate the habit of doing a thing right, and sticking at it until it is done right, is to develop a quality in character which is of the utmost value.

The value, then, of "form" in gymnastics is found in the fact that from the standpoint of animal mechanics, it enables one to do exercises with greater ease; it conserves nervous and muscular energy. It is valuable from an educational standpoint in that it makes progress easier and more rapid; it indicates that the motor nerve centers have been properly trained. It is of value to the moral nature in that it gives one a sense of power which naturally accompanies the control over one's neuro-muscular system; it fosters neatness and orderliness; it promotes accuracy and method; it promotes a desire to do things right, and therefore fosters right thinking; it develops the spirit of determination to overcome difficulties; and it develops physical courage, which is the basis of moral courage. The effects of gymnasium work go deeper than the skin. This work does more than develop or give ability to marshal groups of muscles to perform complicated movements; it develops character through its profound effect upon the motor nerve centers through which the higher mental faculties express themselves.

## PRESIDENT'S ADDRESS.\*

E. B. DEGROOT.

The idea of such an organization as The Society of Secondary School Physical Directors has undoubtedly been in the minds of secondary school physical training men for several years; but not until last summer had the idea received sufficient impetus to effect an organization. Strange to say, this impetus came from the members of the College Gymnasium Directors' Society in greater degree than from the secondary school physical directors themselves. This fact is so significant that I think it calls for an explanation. Doubtless many explanations might be given why such a large body of men as the secondary school physical directors has been so slow to organize and attempt to do the work that such an organization should do, but I think the chief explanation is this:

Until recent years, the college and college entrance requirements have dominated the secondary schools in all departments of work. The chief aim of the secondary school a few years ago was to fit the student for college entrance examinations. Recently there has been a vast change in secondary school aims and ideals. Programs of study have been enlarged and enriched, and now we see the student in the secondary school being fitted not only for college entrance requirements, but, so far as is possible at this time, for life's responsibilities, pleasures, and service to his fellow-men. In our especial field of work this change has not been so marked. Our work has been, and still is, I fear, largely dominated by what may be termed college athletic requirements. In our work, the college has set the pace and the secondary school has simply followed. The college gymnasium directors are, perhaps, more familiar with this fact than are we, and seeing the vast opportunities before secondary school physical instructors for original work, work adapted to the needs of secondary school students other than college athletic requirements, have encouraged and hastened the realization of a society of secondary school physical directors. It should be said, however, in defense of the secondary school physical director, that the multiplicity of duties accompanying his position have given little encouragement or possible time to devote to the formation of societies, attempting research work, or the compilation of data. Until quite recently

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\*Delivered at the first annual meeting of The Society of Secondary School Physical Directors, New York, December 30 and 31, 1902.

it has been, and still is, in many schools, the custom to require the physical director to coach, train, and manage all athletic teams, conduct all gymnasium classes, do something with physical examinations, measurements and records, raise funds for athletic teams, and do "police duty" in dormitories. But, owing to a better and broader appreciation of the several legitimate departments of physical training, even in secondary schools, many instructors in these schools are being relieved of some of these numerous duties, so that we now have at least a little time for collecting data and meeting to compare notes.

At this our first annual meeting, it behooves us, I think, to restate our objects and review our work in the light of the objects set before us. Our declared objects are:

1. The systematic study of physical training problems peculiar to secondary schools.
2. The study of secondary school physical training work in relation to college and university physical training work.
3. The dissemination of results of study and investigation.

The question may well be asked, what are the physical training problems of secondary schools? Generally speaking, they are the yet unsolved problems which confront all men and women engaged in physical training work,—with the possible exception of those who deal in the "correspondence method of physical culture". These unsolved problems of physical training have recently been grouped and stated under three heads, as follows:

"The first problem is a technical one. On it considerable work of permanent value has already been done. All the exercises on all the apparatus, and with all the paraphernalia known to the profession, should be classified according to the mechanical type of muscular movement involved in the exercise. They should be analyzed and grouped according to the strength, range of movement, speed of movement, accuracy of co-ordination, and endurance required. When this has been accomplished, two things can be done: first, the exercises so analyzed can be arranged in a progressive order according to the factors of muscular mechanics involved; and second, they can be arranged in a progressive order according to the physiological effects of the various mechanical types of muscular movement, when the physiological effects are known. This is the first step toward the scientific application of exercises to individuals of different types, with the object of developing all their resources. Combined with this work must be associated an analysis and grouping of the mechanical, physiological and hygienic values of the various track and field sports, gymnastic and athletic games.

"The second problem is the scientific problem. What really takes place when we exercise? What is the effect of the different

varieties of muscular movement on the several functional processes and on the organism as a whole? What is the effect of exercise under different bodily conditions and when associated with other hygienic agencies? Last and most important: What are the physiological relations between neuro-muscular exercise and the development of organic power in the growing child? On the solution of these physiological problems rests the scientific solidity of physical training. Until they are solved the guesswork cannot be eliminated.

"The third group of problems concerns itself with the physiological and temperamental differences between individual people.

"There is now among competent physical trainers an attempt to adapt exercises to the needs, capacities and tastes of different individuals; but the work is crude, because we know scarcely anything concerning the nature of the differences between individuals. We know something of the general physiology of nutrition; scarcely anything concerning the nature of the differences in the economy of the fat man and the lean. We know something of the general physiology of muscular action; scarcely anything concerning the greater power of one man's small muscle over another man's large muscle, or concerning the great differences in quickness of movement or accuracy of co-ordination. We know nothing concerning the enormous differences in excitability or susceptibility to stimuli in the nervous systems of two different individuals."\*

These are problems in general. They concern us as they concern all men engaged in physical training work. May we not hope, and may we not reasonably expect, that some of these problems will be worked out in the secondary schools and by secondary school physical directors?

It seems to me that there is yet, after all the technical and physiological problems have been stated, a matter of the most vital importance of which almost nothing has been said, but which lies at the root of success of physical training in secondary schools. I refer to the fact that secondary school physical instructors should carefully study the aims, ideals, and functions of the secondary schools as such, and endeavor to work out a scheme of physical training in accordance with these aims, ideals, and functions. We have been and still are in many schools trying to secure such a recognition for our work as will give it a place in the regular program, trying to persuade school authorities to make physical training compulsory, or give it a place in the list of studies which yield credits towards certificates, so that all students will elect to take it. Let us take a more active interest in the larger purposes

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\*Clark W. Hetherington, A.B., Professor of Physical Training, Missouri State University.

and ideals of the secondary school, and all of these things will, I dare say, be added unto us.

It seems to me that our work must become an integral part of the whole scheme of secondary education, that dignity and honor will attend our work only in proportion as we are able to contribute something definite to the aims, ideals, and functions of secondary education. It is generally admitted among educators that classroom work contributes very little to the formation of character, or that it is always effective in preparing students for good citizenship. Here, it seems to me, lies our greatest opportunity in secondary education. We should endeavor by well directed efforts to improve the character of and prepare the boy for lofty citizenship through the agencies of physical training. This involves more study and effort along the sociological and physiological lines perhaps, but these factors are, in the case of the secondary schools at least, of more importance than the technical, and quite as important as the physiological aspects of our work. Real success in this endeavor will give our work a permanent and dignified place in secondary education. In this connection I think we should place in our list of indispensable text-books Dr. Gulick's recently published studies concerning the "Psychological, Pedagogical, and Religious Aspects of Group Games", and Professor Paul Hanus's "Educational Aims and Educational Values."

Our second object is an important one—that of study of secondary school physical training work in relation to college physical training work. One of the serious defects in the American educational system is the lack of continuity. Because of this defect, much valuable time (two years, I believe it has been stated by Dr. Nicholas Murray Butler) is lost to every student who passes from the primary school to the university. The spirit of the time is to correct this defect, chiefly by broadening the scope of the secondary school. Let us, in our physical training work, join hands with this movement and strive for continuity in the physical training work of the secondary school and the college or university. To bring about this continuity, we greatly need a common nomenclature. Under present conditions, the freshman who is assigned to the college gymnasium classes must unlearn much that has been learned in the secondary school gymnasium. We can readily understand how his gymnasium troubles would be reduced to the minimum, and how much more beneficial would be his gymnasium work if bodily postures, commands, and "stunts" were the same as those learned in the secondary schools.

Likewise there is great need of continuity in our physical examinations, measurements, and tests. May we not hope that at no distant time, when the boy presents his scholastic credentials for admission to college he will also be required to present a

graphic picture of his physical condition, representing the influence of physical work done in the last two, three, or four years of secondary school life? With such a record in hand, our college gymnasium directors will be greatly assisted in their work, and the boy will profit by such continuity. We also need more uniformity of measurements and tests among secondary schools. We need to collect anthropometric data at some central bureau where it may be worked over for the benefit of all secondary schools and colleges.

There is yet another phase of our work closely related to college work, perhaps more closely related than any other. I refer to our athletic sports and contests. In this department, under the present system, the college is under grave responsibilities to the secondary school. With slight exceptions, scholastic athletics are conducted the same as they are conducted in the colleges. Apparently there would be no difference at all if the secondary schools had the same financial resources as the colleges. All of this is true because, in this department of physical training more than in any other, the college sets the pace and the secondary school simply follows. The influence, therefore, of college athletics over secondary school boys is tremendous, hence the responsibility of the colleges in this matter. If college athletics are irrational, dirty, and savor of professionalism, we may expect much the same condition to prevail in the secondary schools. On the other hand, if college athletics are rational, clean, and kept entirely within the hands of real amateurs, we shall see strict adherence to these desirable attributes of our athletic system in our secondary schools. I think there is in this connection imperative need of careful study of the following propositions:

1. Does the present tendency of colleges to give annual championship track meets to secondary school boys conspire to the boys' best interests?

2. In the case of secondary school boys, would it not be better to adopt longer periods of slow, careful training to the present general practice of short periods of training and frequent contests?

3. In how many track athletic contests is it wise to permit secondary school boys to participate in a single season of two months?

4. Should secondary school boys be required to pass a physical test before participating in athletics on representative school teams, and of what should these tests consist for various games and contests?

5. What should be our attitude in regard to the tendency of secondary school boys to compete with athletic organization other than their own school teams?

6. It is generally understood among secondary school boys that the colleges are "bidding" for the best athletes in secondary schools. I have observed that this tendency is influencing many boys to leave the secondary schools and enter college as "specials", or otherwise, before they are perfectly fitted scholastically to do collegiate work. How can we best correct this tendency?

7. Is it desirable to have boys in secondary schools act as managers of athletic teams, make up schedules and attend to the details of holding games and meets, or should this be left entirely to the instructor in athletics?

8. Lastly, what is the relative value, in the case of secondary school boys, of games—such as football, baseball, basketball—and all round development, as against individual contest and specialization?

Our third stated object, that of disseminating results of study and investigation, is a matter of great importance. In this connection I wish to quote the speaker (Prof. Clark W. Hetherington) at the laying of the corner stone of the Washington University Gymnasium. "Public interest in physical culture is wrought up to a high pitch. The annual rush to the seashore, the woods, the mountains, and the marvelous development during the last two years of bicycling, tennis, golf, and numerous other popular sports, indicates a widespread interest in outdoor life and recreative exercises that amounts to a social movement. These activities are often called fads, but note the fact that the interest is not confined to recreative sports alone; it extends to systematic body-building. Furthermore, the interest in this systematic body-building is not confined to college circles where great sums are expended in the erection of palatial gymnasia, nor to the educators who are struggling with the problem of physical development of the growing child, but it has penetrated into the lives of our whole population. Run over the advertisements of any magazine and you will find whole page, half page, quarter page advertisements of several different men concerning their new and wonderful methods of physical culture—short cuts to health and physical perfection. Whether right or wrong in their methods, the fact remains that there are a large number of these self-styled physical culturists that are well supported by the public. I understand that one of them recently cleared \$20,000 in one year as the result of a system of exercise taught by correspondence, the essentials of which any competent physical trainer could teach in fifteen minutes. Whatever else this phenomenon may portray, it indicates a deep interest in body culture. Therefore, I say, the interest of which I speak is not wholly a fad interest, for it is widespread, deep and earnest. It undoubtedly springs from a deep craving and a profound realization of a great need; yet, on the



systematic side of the work at least, this interest lacks the control of well founded opinions and theories. To a considerable degree it is under the sway of demagogues and shot through with a woeful amount of ignorant presumption. If physical culture is to do its share of the world's work for humanity, we need a compilation of what is really known of the value of body-building, and an exposition or demonstration of these values before the public."

In this matter of dissemination of results of study and investigation, I believe that we should begin at home, that we should try to interest our own students, principals and teachers in the results of our studies. There is now altogether too much mystery, in the student's mind, concerning the physical examinations, programs of exercises, etc. I believe that we should try to make it plain to the students, and to the teachers also, what is the purpose and what we hope to accomplish by use of this or that drill, series of exercises, or day's order; that we should freely use the printing press, our voices, and our pens to bring about this result. The parents of many of our boys in secondary schools are more interested in correspondence courses of physical culture, both for themselves and their boys, than they are interested in our schemes of physical training in the schools to which they send their boys. It therefore seems to me that we have a very important duty to perform in this matter of disseminating the results of our studies and investigations among our own students and their parents.

In conclusion, it seems to me that there is a great work to be performed by just such an organization as The Society of Secondary School Physical Directors. Our opportunities for the betterment of mankind through the agencies of physical training are greater than those of any other body of men engaged in physical training work.

## REPORTS FROM SOCIETIES.

### BOSTON PHYSICAL EDUCATION SOCIETY.

During the year ending December 11, 1902, the interest in the meetings of the society has seemed greater than ever before. An effort has been made to bring its existence more prominently before the public, and some measure of success has followed. For the seven meetings preceding the annual meeting the average attendance has been 82. The total membership is 143. Of these, 3 are advisory members, 22 members of the Boston society only, and 118 are members of the local society and of the A. A. A. P. E. 19 new members have been elected. Among the subjects discussed at the meetings were:

Defective Children, by Dr. D. F. Lincoln and Dr. Thos. D. Wood.

Muscle Soreness, by Dr. Theodore Hough.

Massage and Exercise, by Dr. Douglass Graham.

The Basis for the Adaptation of Various Forms of Exercise to Public School Children, by Dr. W. W. Hastings.

The Play Element in Education, by Dr. Thomas M. Balliet.

A New Test for Strength, Speed, and Endurance, by Dr. D. A. Sargent.

In addition to the formal meetings at which these papers were read, a gymnastic exhibition was given in April under the auspices of the society in which representatives from the different gymnasia of the vicinity took part.

The four sections for research work have reported at different times during the year, each in turn taking charge of the program for a public meeting. At these times detailed reports of the work done by the section were given.

The officers elected at the annual meeting, December 11, 1902, are as follows: President, Dr. Geo. L. Meylan; 1st Vice-President, Mr. Christian Eberhard; 2nd Vice-President, Miss Lillian M. Towne; Secretary, Dr. Mary Rees Mulliner; Treasurer, Miss Mary Hubbard; additional members of the Executive Committee, Miss Leila R. Rous, Mr. M. B. Gilbert, Dr. S. G. Webber.

The Executive Committee has appointed as chairmen of the various sections for research work the following: Miss Edith T. Sears, Section on Public School Work; Dr. S. G. Webber, Section on Medical Gymnastics; Mr. Christian Eberhard, Section on Normal Schools and Gymnasia; Dr. G. W. Fitz, Section on Anthropometry.

MARY REES MULLINER, Secretary.

### CINCINNATI PHYSICAL EDUCATION SOCIETY.

The Cincinnati Society held its December meeting on Friday, the 12th, with all members present. After the transaction of

business, an interesting paper was read by Dr. Jacob Rettich on "The Swoboda and other Systems of Physical Education." A general discussion followed. The next meeting will be in February.

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The Cincinnati Physical Education Society held its regular meeting, Thursday, February 12th, at the rooms of the Teachers' Club. All members were present. Upon the reading of (revised) Constitution of the National Association, a motion was made and carried, that the Secretary write to the Secretary of the National Association to ascertain "What constitutes a Report of a local meeting" and "What constitutes an active local society?" Upon the receipt of an answer to the above, the Secretary was instructed to report the attitude, of the members of the Cincinnati Society, toward the revised Constitution of the National Association.

Following the transaction of further business, two papers were read, one by Adelaide Spills, on "Genetic Psychology"; another by Mr. Guide Werner, on "Health, Strength and Longevity from Eating." An interesting discussion followed; the members adjourned, reluctantly, to meet April 16th.

(Signed) ADELAIDE SPILLS, Secretary.

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#### NEW HAVEN SOCIETY.

The November meeting of the New Haven Physical Education Society was addressed by Professor Beebe, instructor in chemistry in the Boardman Manual Training School. Subject: "Uric Acid; Its Relation to Physical Training."

The January meeting was addressed by Dr. Lafayette B. Mendel, assistant professor of physiological chemistry in Yale University. Subject: "Work and Weariness."

The February meeting was addressed by Mr. Horace Fletcher, of Venice, Italy. Subject: "Nutrition." At the close of the lecture a business meeting was held, with President Louis Leyerzapf in the chair. The last minutes were read, amended and approved, and the following new members elected: Miss Jeannette Whitney, Miss Mabel Freeman, Miss Eva Kress, Miss Mary Hard, Miss Martha Rogers, Miss Ellen Hope Wilson, Miss Emma Paffendorf, Miss Lillian Wright, Mrs. Ruth Stahl, Mr. George Menne.

After the reading of the membership list for 1903 the following officers were elected for the ensuing year: President, Mr. Louis Leyerzapf; First Vice-President, Dr. E. H. Arnold; Second Vice-President, Mr. E. H. Tuttle; Secretary and Treasurer, Miss Caroline M. Wollaston. Additional members of council: Dr. J. W. Seaver, Miss Elsa Pohl, Mrs. Ruth Stahl.

Upon motion, the meeting then adjourned.

CAROLINE M. WOLLASTON, Sec. pro tem.

## REPORTS FROM THE COUNCIL.

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December 6, 1902—Present: Drs. Savage and Gulick, Miss Bancroft, Mr. Haug, Mr. Hepbron, Mr. Hillyer.

The minutes of the two preceding meetings were read and approved.

The following were elected to membership in the association: E. Annerstedt, E. B. Bryant, Ada R. Canton, Clare E. Carter, and Dr. L. I. Mason, all of New York.

The secretary's report, including correspondence, was received and accepted.

Mr. Hillyer moved that the formation of a local society in St. Louis, Mo., be referred to the Committee on Extension. Passed.

Dr. Gulick moved that correspondence with the Society of Secondary School Directors, with reference to affiliation with the National Association, be referred to the Committee on Extension. Passed.

A report of progress from the Southern Michigan Physical Education Society, with reference to the coming convention, was received, discussed, and the secretary instructed to reply.

A report from the treasurer, showing \$174.18 on hand, was read and approved.

The Editor of the REVIEW reported that the September and December numbers of the magazine were in the hands of the printer.

The report of the Committee on Constitution was presented by Dr. Gulick in the absence of the chairman. A final draft of a constitution was read, discussed and adopted, to go into effect March 1st, 1903, unless, before that date, a majority of the new members of the Association send a protest to the secretary of the National Council. The Editor of the REVIEW was instructed to publish this constitution in the December, 1902, number of the REVIEW.

Mr. Hepbron moved that arrangements for transportation from the East to Detroit for members of the A. A. A. P. E. desiring to attend the National Convention of the Association in April, 1903, be referred, with power, to Mr. J. Blake Hillyer as a committee of one, and that Mr. Hillyer report the results of his work in this matter to the editor of the REVIEW for publication in that magazine. Passed.

Regulations for the admission of new members, for the payment of annual dues, and for rebate of dues to local societies under the resolutions to go into effect January 1, 1903, were discussed. In

connection therewith the following resolutions were moved and adopted:

1. That, beginning with 1903, the membership dues be payable in advance in January.

2. That members elected during a year shall receive all back numbers of the REVIEW for that year.

3. That, beginning with No. 1 of Volume VIII, the REVIEW be sent to such members of the Association only as have paid dues for the current year.

4. That applicants for membership in the Association, if members of a local society, must be endorsed by such society through one of its officers, and that such shall be sufficient endorsement.

5. That the secretary of the National Council make to the secretaries of local societies monthly remittances of their portion of annual dues collected from their respective members.

6. That local societies be supplied with blank applications for membership in this Association.

7. That reports of meetings of local societies shall be made to the National Council at least quarterly, and that copies of all papers read at such meetings shall be forwarded with the respective reports to the secretary of the A. A. A. P. E.

JESSIE H. BANCROFT, Secretary.

January 10, 1903—Present: Dr. Savage, Dr. Taylor, Miss MacMartin, Miss Beiderhase, Mr. Haug, Mr. Hepbron, Dr. Gulick, Mr. Hillyer, Miss Bancroft.

The minutes of the previous meeting were read and approved.

The following were elected to membership: Sarah Avery, Lansing, Mich.; Mrs. Thomas S. Conant, Boston, Mass.; J. Evelyn Egbert, Pittsburg, Pa.; Frances H. Flagler, Brooklyn, N. Y.; Herbert H. Holton, Boston, Mass.; Charles J. Jardine, New York; F. Krimmel, New York; Mrs. A. A. Merrill, Brookline, Mass.; Henry B. Savage, M.D., New York; R. C. Sheldon, New York; A. Spiller, Weehawken, N. J.

The report of the Secretary, including correspondence, was read and approved. This included a report of progress from the Southern Michigan Physical Education Society with reference to the Convention.

The Western Pennsylvania Physical Education Society, of Pittsburg, was reported as disbanded.

The report of the Treasurer was received and approved. This showed \$269.68 on hand and \$46.50 in bills receivable.

A report of progress was received from the Editor of the REVIEW.

A report of progress was received from the Committee on Transportation for the Convention.

The Committee on Extension made an admirable report of progress, which was approved.

On motion, the Council adjourned.

JESSIE H. BANCROFT, Secretary.

February 7, 1903—Present: Dr. Savage, Dr. Taylor, Miss MacMartin, Miss Beiderhase, Mr. Haug, Mr. Hepbron, Dr. Gulick and Miss Bancroft.

The minutes of the last meeting were read and approved.

The following were elected to membership: Bailey, Josephine, Boston, Mass.; Burger, Katherine, New York City; Breck, Mary Adams, Roxbury, Mass.; Crane, C. W., Chicago, Ill.; Colby, Florence M. N., Cambridge, Mass.; Eldridge, Louis D., Freidenrich, O. W., New York City; Graham, Douglas, M.D., Boston, Mass.; Hamnett, Harold, Findlay, Ohio; Howard, Alice M., Boston, Mass.; Jackson, C. R. H., Scranton, Pa.; Jameson, Russell P., Morenci, Arizona; Koenig, Otto, St. Louis, Mo.; Littlejohn, Alice, Washington, D. C.; Landon, T. D., Borden-town, N. J.; Marsh, Lucian J., Springfield, Mass.; Mayo, Harriett Florence, Boston, Mass.; Muegge, Aug. H., St. Louis, Mo.; McMahon, Laura V., Philadelphia, Pa.; Nathan, Albert, St. Louis, Mo.; Page, Peirson S., M. D., Andover, Mass.; Porter, Isaac Jr., Philadelphia, Pa.; Ryder, J. Peterson, Philadelphia, Pa.; Sweet, Kate Amelia, Smyrna, N. Y.; Schneider, F. C. E., St. Louis, Mo.; Smith, Pearl J., Boston, Mass.; Wagner, Elizabeth, Philadelphia, Pa.; Weymouth, C. A., Garden City, N. Y.; Wordell, Alice G., New Dorchester, Mass.; Young, Elizabeth, Detroit, Mich.

The report of the Secretary, including correspondence, was received and approved.

A communication was received from the New Hampshire State Library, asking for files and current issues of the REVIEW as a gift. Mr. Hillyer moved that as the back numbers of the REVIEW are limited, owing to an unusual demand for them in the past years, the Secretary be instructed to inform the New Hampshire State Library that the Council feels it can dispose of the magazine only by sale. Passed.

A report of progress from the Convention Committee was received and approved.

A report of progress was received from the editor of the REVIEW.

The Committee on Transportation to the Convention made a report of progress.

The Committee on Extension reported over one thousand communications sent out in the prosecution of its work.

The Council adjourned.

JESSIE H. BANCROFT, Secretary.

## OFFICIAL ANNOUNCEMENTS.

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A request has been received from the Boston Society that the proposed Constitution be brought before the Convention rather than that it be adopted on March first. At a special meeting of the Council it was decided that there was not unanimity of feeling sufficient to warrant the adoption of the Constitution prior to the Convention, and that the action proposed by the Boston Society was wise.

In order to facilitate action and promote harmony the Council has requested the local societies to each nominate a member of a committee which shall discuss the matter of Constitution and recommend to the Convention some plan of action.

The Hotel Cadillac is to be the headquarters of the Convention at Detroit. Special rates to delegates are: American plan, rooms without bath, \$3.00 to \$4.00 per day; with bath, \$3.50 to \$5.00. European plan, rooms from \$2.00 to \$4.00 per day for each person.

All persons going to the Convention should write immediately to J. Blake Hillier, 23 Tompkins Avenue, New Brighton, S. I., N. Y., unless they have already done so. This is that reduced railroad rates may be, if possible, secured.

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## EDITORIAL NOTE AND COMMENT.

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Dr. Balliet's instructing and stimulating article has important bearings on physical education. The primary relations between motor and physical activities have been illuminated.

All of the play in children is instinctive, guided more or less by social tradition. These plays serve to afford the instinct to mature and so do its work in the development of personality. It is a part of our function to see that the plays and games, particularly of adolescents, take forms by which these instincts may be transformed into the gold of fine character. Football, for instance, may be a potent factor in developing either good or bad character, depending on the social traditions surrounding the game. The same may be said of nearly all sports.

Because of the shortness of the time elapsing between the publication of this number and the preceding one, much of the customary abstract material is delayed.

## BOOK NOTICES AND BIBLIOGRAPHY.

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**A TREATISE ON MASSAGE. PP. 642. 3D EDITION, REVISED. ENLARGED ILLUSTRATION.**

Its history, mode of application and effects, indications and counter indications. This is the best popular book on massage. It is not as technical as Klein, but is quite as practical. It has a multitude of illustrated cases. The instructions are clear and adequate.

L. G.

**ONE HUNDRED AND FIFTY GYMNASTIC GAMES. BOSTON NORMAL SCHOOL OF GYMNASTICS.**

A new edition of a most valuable book.

**A MANUAL FOR PHYSICAL MEASUREMENTS, FOR USE IN NORMAL SCHOOLS, PUBLIC AND PREPARATORY SCHOOLS, BOYS' CLUBS AND Y. M. C. A., WITH ANTHROPOMETRIC TABLES FOR EACH HEIGHT OF EACH AGE FROM FIVE TO TWENTY YEARS, AND VITALITY COEFFICIENTS. W. W. HASTINGS, PH.D. SPRINGFIELD, MASS.**

Dr. Hastings has done much work in anthropometry. His papers have hitherto been scattered through various publications but now his whole plan and work are rendered available for general use. There are two volumes, one for boys, the other for girls. They differ from each other in the tables of measurements. The general contents are identical. The work deserves, and is reserved for, more extended notice.

L. G.



## ABSTRACTS.

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OBSERVATIONS OF PHYSICAL TRAINING IN AND OUT OF SCHOOL, by Dr. W. T. Harris, in the *Journal of Education* for December 25 and January 1.

Dr. Harris contrasts the motives of people of other nations and times with those of the present for taking physical exercise: "We regard physical exercise as desirable for the increase of nervous energy to be expended for rational spiritual purposes". The three important factors in the conservation and restoration of energy are: Food and its proper assimilation; rest and sleep; and exercise, muscular and mental. Certain simple, common sense observations in regard to the time for exercise, the question of correct breathing, early rising, and other matters of every day living are given.

SOME PHYSICAL ABNORMALITIES OF BOYS WHICH CLUB LEADERS SHOULD UNDERSTAND, by Winthrop T. Talbot, M.D., in *Education* for January 9.

This paper is addressed particularly to those in charge of summer camps and outing parties. Dr. Talbot believes that there is not sufficient attention given to the physical needs, conditions, and abnormalities of boys, and that intelligent care in this direction would undoubtedly show an improved mental and moral tone. Physical inefficiency or deficiency, in his opinion, will be found, in almost every case, to be the cause of dullness and bad behavior.

FOOTBALL, by Joseph Kennedy, in *Education* for January 9.

We have here another college man deploring many of the present tendencies in football and expressing the wish that athletics in general, as well as other sports, might occupy with football the interest of both spectators and competitors. The claims of football as a superior game for the development of both physical and moral qualities Mr. Kennedy believes to be much exaggerated, and that other games would prove equally valuable where the training was not carried to such extremes. In regard to the feelings engendered between the different schools, he pithily says, "Football creates much of the ill will it allays, but does not allay all the ill will it creates."

BOSTON'S PLAYGROUND SYSTEM, by Joseph Lee, in the *New England Magazine* for January 9.

Mr. Lee gives a most interesting account of the establishing of playgrounds, free baths, sand piles, and outdoor gymnasiums in Boston and, incidentally, in other large cities. While a great deal

has been done in this direction, Mr. Lee believes that we are but at the beginning of a movement which shall give to all the children of the city opportunities for play at all times of the year. At the present time there seems to be particular need that more should be done for girls.

WAR AGAINST DISEASE, by E. A. Winslow, in the *Atlantic Monthly* for January 9.

The triumphs of science in overcoming such diseases as small-pox, diphtheria, typhoid, malaria and yellow fever are reviewed quite largely for the purpose of recalling to the public mind the tremendous seriousness of the problems which have already been partially, and in some cases almost entirely, solved, in order that we may not now from carelessness lose ground, and in order that we may be stimulated to work for the eradication of still other diseases which create such great havoc in the human family. Those of the most serious import at the present time are consumption and the diarrhoeal diseases of children. While much has been done toward arousing people to the dangers of these diseases and educating them to the use of the protective agencies which are within the power of all, much still remains to be done; and in this article Mr. Winslow gives suggestions as to ways in which the public may be still further educated in this direction.

THE PREVENTION OF PHYSICAL BREAKDOWN: An explanation of preventive medicine for the layman—lop off outlying affairs, leave a margin of strength, avoid a rut, cultivate a healthful hobby, take vacations, sleep, avoid excess in tobacco and drink, and a breakdown is not necessary even to the most strenuous man, by Floyd M. Crandall, M.D., in the *World's Work* for February 7.

In his sub-title Dr. Crandall sums up his ideas on the subject of the avoidance of a breakdown. Lack of self-control, particularly in regard to the amount of time and energy given to small things, he believes to be one fruitful source of trouble. "The one prudence of life is concentration; the one evil, dissipation."

MORE PHYSICAL VIGOR FOR ALL, by Caroline L. Hunt, in the *Chautauquan* for February 7.

The fifth article in a series on "The Home: Its Relation to the Problem of More Life for All". Miss Hunt gives many breezy suggestions as to more wholesome ways of life, laying stress on the things that make for beauty, for freedom, and for joy.

MARTHA GARSIDE.

## LIST OF PUBLICATIONS OF THE A. A. A. P. E.

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The following publications of the A. A. A. P. E. may be obtained from the Secretary, Jessie H. Bancroft, 80 Joralemon Street, Brooklyn, N. Y. City, at the prices given below. The figures enclosed in parentheses indicate reduced prices to members:

Annual Report for 1885, pp. 8.....	Out of print.	
Annual Report for 1886, pp. 35.....	Out of print.	
Reprint from Report for 1886, containing an address by Dr. E. Hitchcock and the Report of the Anthropometric Committee, pp. 17.....	\$0.50	
Annual Report for 1887, pp. 52.....	1.00	
Annual Report for 1888, pp. 56.....	Out of print.	
Conference Report for 1889, pp. 135 (bound)...	1.00	
Annual Report for 1890, pp. 86.....	Out of print.	
Annual Report for 1891, pp. 127.....	1.00	
Annual Report for 1892, pp. 264.....	1.00	
Annual Report for 1893, pp. 66.....	1.00	
Annual Report for 1894, pp. 154.....	1.00	(0.50)
Annual Report for 1895, pp. 242.....	1.00	(0.50)
Index to the Annual Reports, by J. M. Pierce, pp. 11. ....	0.05	
American Physical Education Review:		
Vol. I, 1896, pp. 128.....	0.75	(0.50)
Vol. II, 1897, pp. 264 [2 Nos., Sept. and Dec., at 50c (25) each].....	1.50	(1.00)
(The March and June numbers for Vol. II are out of print.)		
Vol. III, 1898, pp. 322 [4 Nos. at 50c (25c) each]	1.50	(1.00)
Vol. IV, 1899, pp. 396 [4 Nos. at 50c (25c) each]	1.50	(1.00)
Vol. V, 1900, pp. 375 [4 Nos. at 50c (25c) each]	1.50	(1.00)
Vol. VI, 1901, pp. 338 [4 Nos. at 50c (25c) each]	1.50	(1.00)
Vol. VII, 1902, pp. 250 [4 Nos. at 50c (25c) each] .....	1.50	(1.00)



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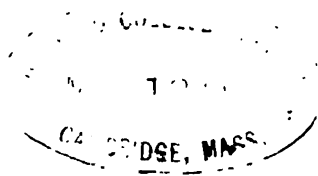
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# **American Physical Education Review**

**SUPPLEMENT**

**MARCH, 1903**

EAGLE PRESS, BROOKLYN.

# **NATIONAL CONVENTION**

## **American Association for the Advancement of Physical Education**

***Detroit, Michigan, April 6, 7, 8, 9, 1903***

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**MONDAY, APRIL 6.**

**8 P. M.—Reception :** Thomas Normal Training School,  
550 Woodward Avenue.

**TUESDAY, APRIL 7.**

**Detroit Eastern High School.**

**9.30 A. M.—Address of Welcome,**  
William C. Maybury, Mayor of Detroit.  
**Response,**  
Dr. Watson L. Savage, President of A. A. A. P. E.  
**President's Address.**  
**Business.**

**2.30 P. M.—Paper :** "The Place of Automatism in Gymnastic  
Exercise,"

Miss Jessie H. Bancroft, Director of Physical Training,  
Public Schools, Borough of Brooklyn, New York City.

**Paper :** "Blood Pressure in Exercises of Strength,  
Speed and Endurance,"

Dr. James H. McCurdy, Director of Y. M. C. A. Training  
School, Springfield, Mass.



Paper : "Effect of Exercise on the Pulse Rate,"  
Mr. Wilbur P. Bowen, Department of Physiology, University of Michigan.

Paper : "Physical Directorship,"  
Dr. Henry F. Kallenberg, Director of Physical Courses,  
Secretarial Institute Training School, Chicago, Ill.

8 P. M.—Light Guard Armory.  
Exhibition of Practical Work,  
School and Gymnastic Societies of Detroit.

**WEDNESDAY, APRIL 8.**

8.30 A. M.—Cars leave Cadillac Hotel for Ypsilanti.

10.30 A. M.—Exhibition of Practical Work,  
Women's Gymnasium, State Normal College, Ypsilanti,  
Mrs. Fannie Cheever Burton, Director.

12.45 P. M.—Cars leave Gymnasium at Ypsilanti Normal College  
for Ann Arbor.

2.30 P. M.—SECTION MEETINGS.  
University of Michigan.

SECTION ON NORMAL SCHOOLS—Sara Caswell Angel Hall.  
President, Baroness Rose Posse, Director Posse Gymnasium, Boston, Mass.

President's Address.

Paper : "The Value of Psychology in the Preparation  
of the Teacher of Gymnastics,"  
Dr. Wm. O. Krohn, Chicago, Ill.

Paper : "Normal Schools of Germany,"  
Dr. Fred E. Leonard, Oberlin College, Oberlin, Ohio.

Paper : "Physical Training from the Physician's  
Standpoint,"  
Dr. G. Van Buskirk Quehles, Boston, Mass.

**Paper : "The Place of the State Normal School in  
the Correlation of Physical Examina-  
tions and Physical Exercise in Public  
Schools,"**

**Dr. Wm. W. Hastings, Y. M. C. A. Training School, Bos-  
ton, Mass.**

**The papers will be discussed by :**

**Dr. D. A. Sargent, Harvard University; Dr. Watson L. Savage,  
Columbia University; Dr. E. H. Arnold, New Haven  
Normal School of Gymnastics, New Haven, Conn.; Dr. J.  
E. Raycroft, University of Chicago; Miss M. P. Clough,  
Detroit; Mrs. Fannie Cheever Burton, State Normal Col-  
lege, Ypsilanti, Mich.; Mr. W. E. Day, Y. M. C. A., Day-  
ton, Ohio; Miss Edith M. Love, Director of Physical  
Training, State Normal School, Terre Haute, Ind.; Miss  
Elizabeth Young, Western High School, Detroit.**

**SECTION ON ANTHROPOMETRY—**

**Barbour Gymnasium.**

**President, William W. Hastings, Ph.D., International Young  
Men's Christian Association Training School, Boston,  
Mass.**

**President's Address,**

**"Present Tendencies in Physical Examination."**

- 1. Universal Test for Strength, Speed and Endurance of the  
Human Body. Dudley Allen Sargent, M.D., Harvard  
University.**
- 2. The Relative Value of Strength Tests, and Some Methods of  
Taking these Tests. Joseph E. Raycroft, M.D., The  
University of Chicago.**
- 3. A Preliminary Report of the "Committee on the Revision of  
the Physical Examination," appointed by the Society of  
College Gymnasium Directors, Dec., 1902. Paul C. Phil-  
lips, M.D., Amherst College.**
- 4. The Physical Examination in Normal Schools and Public  
Schools. C. E. Ehinger, M.D., West Chester State Normal  
School.**

5. Report of the Present Status and Special Problems of Anthropometric Examinations in the Physical Work of the Young Men's Christian Associations. Geo. L. Meylan, M.D., Boston Young Men's Christian Association.
6. Paper : "Some Anthropometric Data of Western College Girls." Miss Anne Barr, University of Nebraska.

**SECTION ON ELEMENTARY SCHOOLS—Waterman Gymnasium.**

President, Miss Ada Frances Thayer, Director of Physical Training, Public Schools, Syracuse, N. Y.

President's Address : "Physical Training in Relation to Other Subjects of the School Curriculum."

Paper : "Gymnastic Games and Plays in the Curriculum of the Elementary Schools,"

Dr. E. H. Arnold, Director Physical Training, New Haven Public Schools.

Paper : "Plays and Games,"

Speaker delegated by the Boston Normal School of Gymnastics.

Paper : "Devices," Miss Pray, Toledo, Ohio.

5 P. M.—Reception and Tea,

Given by Women's League, University of Michigan.

7.30 P. M.—Exhibition of Practical Work,

Barbour Gymnasium—Men and Women of University of Michigan, directed by Mr. Keene Fitzpatrick and Dr. Alice G. Snyder.

9.45 P. M.—Cars leave The University at Ann Arbor for Detroit.

**THURSDAY, APRIL 9—DETROIT.**

9.30 A. M.—SYMPOSIUM : "PRESENT CONDITION OF GYMNASTICS AND ATHLETICS IN THE UNITED STATES."

College Work—Dr. James A. Babbitt, Haverford College, Haverford, Pa.

**NORMAL SCHOOLS—**

Delphine Hanna, A.M., M.D., Director of Physical Training in Women's Department, Oberlin College, Oberlin, Ohio.

**NORTH AMERICAN GYMNASTIC UNION—**

Dr. Henry Hartung, Chicago, Ill.

**YOUNG MEN'S CHRISTIAN ASSOCIATION—**

Mr. Geo. T. Hepbron, New York City.

**ATHLETIC CLUBS—**

Mr. James Sullivan, New York City.

**PLAYGROUNDS—**

Mr. Charles B. Stover, New York City.

Paper : "The Value and Relation of Physical Exercises to Methods for the Cure of Stammering and Stuttering,"

Mr. Geo. A. Lewis, Lewis Phonometric Institute and School for Stammerers, Detroit, Mich.

2.30 P. M.—Turkish Room, Cadillac Hotel, Business Meeting.

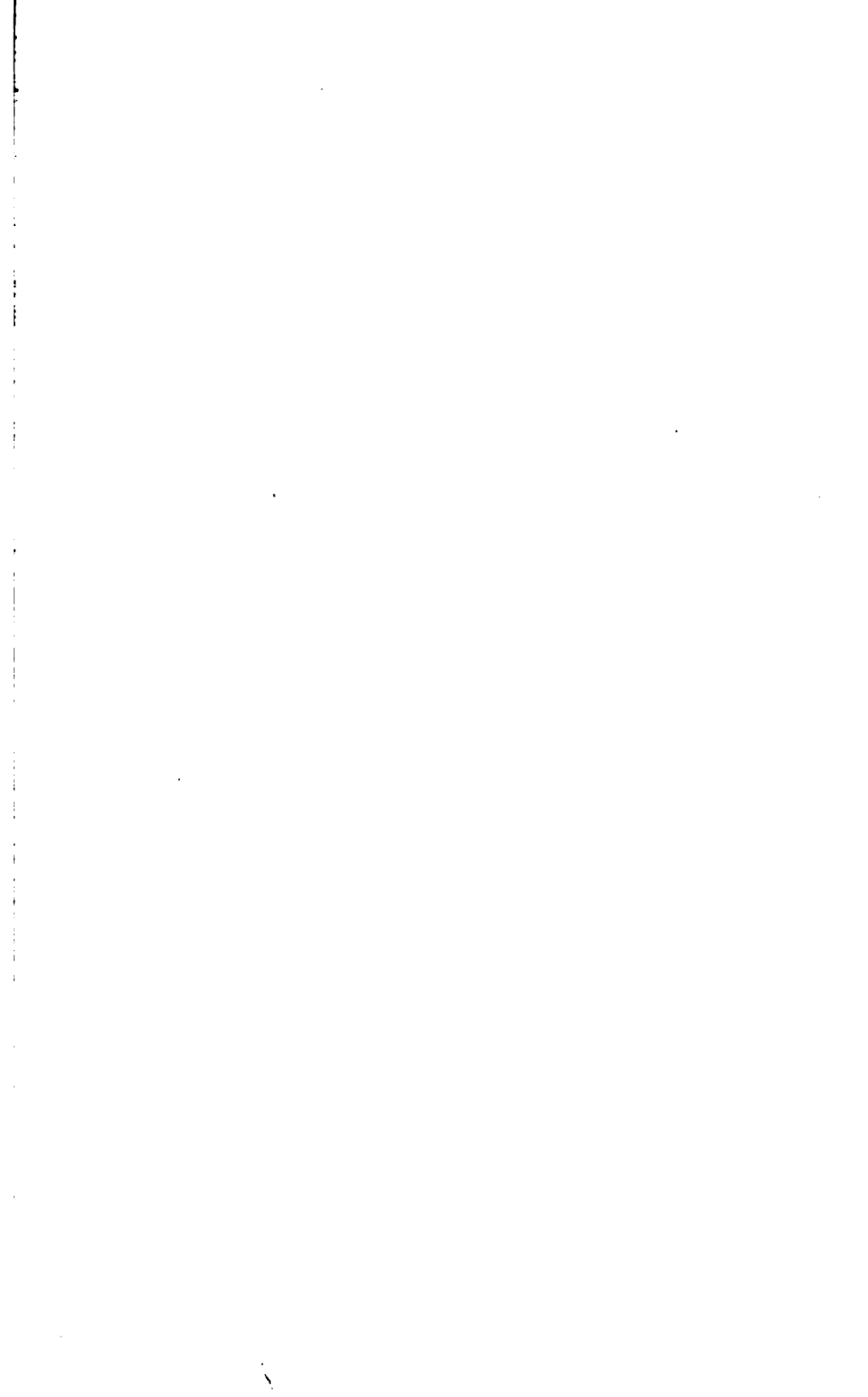
8 P. M.—Address : "The Place of Physical Training in Education,"

President L. H. Jones,  
State Normal College, Ypsilanti.

Address :

"Physical Training and Recesses in Factory Improvement Work,"

Mr. Arnold Shanklin, formerly Head of Advance Department, National Cash Register Co., St. Louis, Mo.



## REPORT OF COMMITTEE ON CONSTITUTION.

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The Committee met on March 7, 1903, at 10 A.M., in the Hall of the Board of Education, New York City.

Present—Dr. Mary Rees Mulliner of the Boston Society, Miss Evaline Young of the Philadelphia Society, Dr. Luther Halsey Gulick of the New York Society.

Dr. Mulliner was elected Chairman.

Dr. Gulick was elected Secretary.

Four plans were open to the Committee :

1. To draft a new constitution.
2. To proceed on the basis of altering the constitution of 1895.
3. To proceed on the basis of altering the constitution offered at the last Convention.
4. To proceed on the basis of altering the constitution proposed by the present Council.

It was unanimously agreed that the constitution proposed by the present Council presented the best basis for discussion.

Having agreed that the Council should be representative and legislative, the Convention retaining veto power, the following constitution was drafted and is herewith presented. The articles were discussed separately and adopted only on unanimous vote.

### PROPOSED CONSTITUTION.

#### NAME.

ARTICLE 1. This body shall be called The American Physical Education Association.

#### OBJECTS.

ART. 2. The objects of this Association shall be to awaken a wider and more intelligent interest in physical education; to acquire and disseminate knowledge concerning it; and to labor for the improvement and extension of gymnastics, games, and athletics.

#### MEMBERSHIP.

ART. 3. The Association shall consist of members and honorary members.

ART. 4. Any person may become a member of the Association upon recommendation by two members or by a local society, election by the Council, and the payment of one year's dues.

ART. 5. The annual fee for membership shall be two dollars. The PHYSICAL EDUCATION REVIEW shall be sent gratis to all paid-up members.

ART. 6. The dues shall be for the calendar year designated by the applicant.

ART. 7. Honorary members shall be nominated by the Council and elected by a two-thirds vote of the members present at a national convention.

ART. 8. Any member who fails to pay dues for two years shall thereby

forfeit membership in the Association provided that two notices of indebtedness, at an interval of at least three months, shall have been given. Such person may be restored to membership only upon payment of arrearages or upon re-election and a payment of reinstatement fee of two dollars and one year's dues.

#### COUNCIL.

ART. 9. The government of the Association, except where otherwise provided by the constitution, shall be vested in a national Council. The Council shall be composed as follows:

1. The Presidents of active local societies having fifteen members in the national society.
2. The Presidents of all sections of the national Association.
3. The President of the preceding council.
4. The Editor of *THE PHYSICAL EDUCATION REVIEW*.
5. Enough additional persons to make a constant working body of nine in the territory in which the national Council has its headquarters. These additional persons shall be elected by the local society of said territory and shall be members of this local and of the national societies.

ART. 10. The officers of the Council shall be a president, a vice-president from each section, a secretary, and a treasurer. Vice-presidents shall rank in the order of their age in membership in the national Association.

ART. 11. The Council shall elect its own president, secretary, treasurer, and editor.

ART. 12. The Council and its officers shall be elected for a term of two years.

ART. 13. The Council shall fill any vacancies that may occur in its own body.

ART. 14. The Council shall appoint its own committees, manage all the affairs of the Association under the constitution. It may initiate any legislation for the Association subject to the veto of the National Convention.

ART. 15. Five members of the Council shall be a quorum for the transaction of business, provided that all important matters shall be adopted only by a majority vote of the entire Council.

ART. 16. The Council shall arrange for the holding of a national convention at least biennially.

ART. 17. The president, or, in his absence, the senior vice-president present, shall preside at national conventions of the Association and at meetings of the Council. It shall be the duty of the president to give an address at the national convention of the Association over which he presides.

ART. 18. The secretary of the Council shall keep a record of the proceedings of the Council, receive and present applications for membership, collect dues, make an official report to the National Convention, and perform such other duties as the Council may direct. The secretary shall be paid an annual salary, the amount to be fixed by the Council.

ART. 19. The treasurer shall care for and expend all funds under the direction of the Council, and shall present an account of the funds at each regular meeting of the Council and at each National Convention.

ART. 20. The Council may, by a three-fourths vote, establish or discontinue the affiliation of a national section with the national Association.

ART. 21. The Council may, by a three-fourths vote, establish or discontinue the affiliation of a local society with the national convention.

ART. 22. The national secretary shall annually send one dollar to the secretary of each active and affiliated local society for each paid up member of the national Association who is also a member of said local society.

## NATIONAL SECTIONS.

ART. 23. Members of the national Association who organize in the interests of some particular department or phase of physical education, irrespective of geographical lines, may become a section of the national Association upon election by the national Council.

ART. 24. Sections may be affiliated, or their affiliation canceled, by a three-fourths vote of the national Council.

ART. 25. Only members in good standing in the national Association shall be legible to membership in any section. Membership in the section may continue only so long as the member remains in good standing in the national body.

ART. 26. Each section shall elect its own members, officers and committees; fix its own dues; and otherwise manage its own affairs so long as the general constitution of the national Association be not violated. Proceedings shall be reported to the national Council for publication in the REVIEW.

ART. 27. The presidents of sections having fifteen or more members shall be ex officio members and vice-presidents of the national Council. Their rank as vice-presidents shall be in the order of seniority of membership in the national Association.

## LOCAL SOCIETIES.

ART. 28. Members of the national Association who represent a limited territory and who organize for the general interests of physical education, provided they meet the conditions of an active local society, may become affiliated with the national Association as a local society upon election by the national Council.

ART. 29. Local societies may be affiliated with the national Association, or their affiliation cancelled, by a three-fourths vote of the national Council.

ART. 30. Local societies which hold at least four meetings during each year, and report the same to the national Council for publication in the REVIEW, shall be known as *active societies*. They shall receive from the national Council one dollar for that year for each member of the local society who is a paid up member of the national Association.

ART. 31. Local societies shall be represented in the National Convention by delegates who shall be chosen on the basis of one delegate to each fifteen national members. Each delegate may represent fifteen members, but never more than thirty.

ART. 32. Each local society shall elect its own members, officers, committees, fix its own dues, and otherwise manage its own affairs so long as the general constitution of the national Association be not violated. It is not necessary that members of local societies be members of the national Association. Only national members shall be entitled to the REVIEW gratis.

ART. 33. The presidents of active local societies having fifteen or more members who are members of the national Association shall be ex officio members of the national Council.

## NATIONAL CONVENTION.

ART. 34. The Council shall arrange for the holding of a national convention at least biennially.

ART. 35. Conventions shall be managed by a local society approved by, and under the direction of, the national Council.



ART. 36. The Convention shall be composed of delegates, members and guests. The delegates and members shall alone be entitled to the floor or to vote. Each member may cast one vote. Each delegate may cast not less than fifteen nor more than thirty votes, the number in each case to be determined as in Article 31.

ART. 37. The president of the Council or in his absence the senior vice-president present shall preside at national conventions of the Associations. It shall be the duty of the president to give an address at the national Convention over which he presides.

ART. 38. The secretary of the national Convention shall be appointed by the local society managing the convention and shall record the proceedings of the convention for transmission to the secretary of the council.

ART. 39. When assembled in national Convention the Association shall determine the headquarters of the national Council.

ART. 40. When assembled in national Convention the Association may amend any part of the constitution by a three-fourths vote of the delegates and members present, provided it has been approved by the national Council and published in the REVIEW not less than three months prior to the date of the Convention.

#### PHYSICAL EDUCATION REVIEW.

ART. 41. The national Association shall publish a journal to be known as the AMERICAN PHYSICAL EDUCATION REVIEW.

ART. 42. The subscription price of the REVIEW shall be two dollars per annum.

ART. 43. The REVIEW shall be sent free to all paid-up members of the national Association.

ART. 44. The REVIEW shall be the official organ of the Association, and in it shall be printed the proceedings of the national Council and of all active and affiliated sections and local societies.

ART. 45. The editor of the REVIEW shall be elected and directed by the national Council.

ART. 46. The editor shall be ex officio a member of the national Council.

All of which is respectfully submitted.

MARY REES MULLINER, Chairman.

EVALINE YOUNG.

LUTHER HALSEY GULICK, Secretary.

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Through pressure of other duties, having been unable to attend the meeting of the Committee on Constitution, I desire hereby to express my approval of the report rendered, with one exception, viz.: Article 10 should read: A president *elected by the National Association*, a vice-president, etc.

Very truly,

ELIZA M. MOSHER,

*For the Michigan Society.*

# AMERICAN PHYSICAL EDUCATION REVIEW.

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PUBLISHED BY

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# American Physical Education Association.

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# AMERICAN PHYSICAL EDUCATION REVIEW.

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## ATHLETICS IN SECONDARY SCHOOLS.

D. A. SARGENT.

Harvard University.

It is perhaps only natural that the great interest aroused in athletics in the universities and colleges should have extended into the preparatory or secondary schools. In the establishment of the numerous school athletic clubs, interscholastic state leagues, and national interscholastic athletic associations, with their frequent contests and large and enthusiastic following, we recognize the existence of a movement which must soon be reckoned with in considering the subject of secondary school education. In fact many of the problems connected with athletics which have long perplexed the college authorities are now beginning to demand the attention of school teachers and school superintendents.

In the secondary schools the athletic problems are even made more complicated than those in the colleges in consequence of the youthfulness of the pupils, the want of proper facilities for training and the inability of the authorities, especially in some of the public schools and private day schools, to furnish immediate supervision of the pupils or have any control of their exercises outside of school hours.

The recognized importance of the subject, the difficulties encountered in the way of administration, and the evils that have resulted from want of proper supervision and control of athletics in the preparatory schools, have led to an increasing demand from these institutions for well qualified teachers of physical training. Indeed higher salaries are offered to-day for men who can take charge of the physical training and athletics in the large fitting schools than are paid to the instructors in the same line of work in many of the colleges. Inasmuch as these schools are by far more numerous than the colleges, a large part of the normal work will soon have to be devoted to the training of teachers for this branch of service. Let us consider therefore, briefly, some of the problems that have to be met in managing athletics in the secondary schools, and then see if there is any satisfactory way in which these problems may be solved. It is exceedingly

unfortunate for the cause of physical education that the terms athletics, physical training and gymnastics are used synonymously by the general public. The original Greek word for athlete meant a prize fighter, then one who contended for a prize. The secondary definition was made to include anyone trained to contend in exercises requiring great physical agility and strength—one who has great activity and strength, a champion. Originally a gymnast was a trainer of athletes, then one who teaches or practices gymnastic exercises for health, defense or diversion. With the Greeks the term gymnastics included such games or exercises as running, leaping, wrestling, throwing the discus, the javelin, etc. Physical education as defined by Webster means training the bodily organs and powers with a view to the promotion of health and vigor. Although the growth and development of these great subjects during the past few years would make them include many more topics and sub-topics with finer distinction as to their meaning, the great fundamental truths would still remain, that most forms of athletics and many forms of gymnastics refer to contests for prizes or to contests requiring great physical agility and strength, while physical education and most forms of gymnastics refer to the training of the bodily organs and powers with a view to the promotion of health and vigor. It is well to keep these primitive definitions in mind in considering the responsibility of the school authorities and instructors in dealing with athletics.

As long as attendance at school is compulsory it would seem to be perfectly reasonable to exact that nothing should be done to interfere with the natural growth and development of the child, and that everything should be done to accomplish the purpose for which the child was sent to school. It is an established fact that school life does tend to retard growth and development, and to produce certain organic weaknesses and physical defects. It has also been shown by the extended observations of many investigators in different parts of this country and in Europe that whatever improves the physical condition of the pupils tends to improve their mental condition as indicated by the higher grades that such pupils have invariably attained. Carefully selected, well regulated, systematic physical exercises have long been recognized as the best means of promoting growth and development, and of correcting the defects and deformities that result from the child's attempt to adapt himself to school seats, desks and other schoolroom environments. It is now recognized also, that physical exercise furnishes the best means of renovating and invigorating the brain through its influence upon the respiration, circulation and digestion. It would therefore seem that some kind of physical exercise was absolutely necessary in order to preserve the health of

the child, and build and develop the brain, which is the primary object of the whole school system.

In consequence of the neglect of the elementary schools to make arrangement for physical exercise many of the pupils come up to the secondary schools with their drooping heads, flat chests, projecting shoulder blades and other school bench deformities, which must be attacked at once if they are ever to be corrected. Physical defects are so common during the early teens, and they are so susceptible of improvement at this time, that the whole school class should be put through a daily systematic drill in view of counteracting the evil effects due to the confinements and restrictions of schoolroom life. The best means of furnishing these necessary exercises is through the ordinary calisthenics, free movements and light gymnastics with dumb-bells, wands and Indian clubs. Some of these exercises should be given daily in the form of drills in one or two, ten, fifteen or thirty minute periods. They should be given by the regular teacher without any apology, or without any reason why, simply as a matter of course. Moreover, the pupils who engage in these physical requirements should be given credit for the work done and the results accomplished just as they would for any other school study or exercise. One object of taking this stand is to impress upon our youth during the formative period the essential unity of mind and body, and to teach them the fallacy of neglecting one in hope of improving the other. Another reason for giving credit is to enable the teacher to command the attention of the pupils and present the subject with as much care and thoughtfulness as he would any other branch of instruction. If arrangements could be made for it, each pupil should have a certain amount of individual attention and instruction in order that special faults and defects could be eradicated, and lines of special development suggested. I should not insist upon the special work, however, as part of the school requirement unless it was taken as a substitute for the other exercises.

The ten or fifteen minutes' drill in the schoolroom should be supplemented by well regulated plays and games at recess time. I say well regulated plays and games, because it is of the utmost importance that the right games should be introduced at the right time, and that they should be checked in case they become too violent, overheating or exciting. These recess games should be voluntary, and in the management of them the school teacher should take the position of the leader and adviser rather than a preceptor. Of course, he should be perfectly familiar with all the games taught and be the willing interpreter of all the rules and regulations governing them. He should encourage the weak and timid, and restrain those who are too strong and overbear-

ing. He should be the umpire in all disputes, and the ready exponent of justice and fair play. Occasionally he should start impromptu contests in running, jumping and some of the lighter forms of gymnastics and athletics. He should be the first one to recognize merit when he sees it, and call attention to the fine points and particular excellency of any one's performance. On the other hand, he should be the first one to frown upon anything that looked like cheating or dishonesty, and should visit his disapproval immediately upon any young athlete who gained an advantage by any kind of unfairness. By supervising and conducting games in this way the teacher has not only an admirable opportunity to study the character of his pupils, which may be turned to account in their school work, but he also has a chance to instill into their minds the importance of such qualities as promptness, obedience, alertness, energy, courage, perseverance, justice, etc., in connection with athletic sports.

The physical work which I have already outlined should be carried on under the direction of the director or supervisor of physical training as an essential part of the general school curriculum. The question now arises, should the school authorities carry the matter of physical training further and undertake to provide instruction for special athletes and assume the direction and management of interscholastic contests and athletic games. As long as competitive athletics are made general and confined to a single school, there would seem to be no good reason why the pupils should not be taught how to run, row, jump, fence, box, wrestle and swim, and to play baseball, football and other antagonistic games. Indeed there are many very good reasons why all the pupils should be taught these exercises and encouraged to test themselves with others in trials of strength, skill and endurance. In order that these exercises should be well taught, and the contests well managed, they should be under the direct supervision of the director of physical training backed by the school authorities. While keeping general control of the athletic work the tactful director would of course avail himself of the services of his best pupils as captains, leaders, assistants, etc. Under this arrangement a sense of proportion could be maintained between the physical and mental work, and athletics could be made to harmonize with the general school program. The readiness of school authorities to provide for this extra instruction and supervision would depend of course upon the willingness of the people or some benevolently disposed individuals to provide the money for the same. A great deal can be done towards making certain forms of athletics self supporting, by making them interesting and attractive to the public, but in this way danger lies.

It is a familiar phase of human nature that when a boy or

group of boys have conquered one school or community, that they immediately desire more schools or communities to conquer. It is an appetite that grows by what it feeds upon, and is unfortunately not confined to boys or to men individually, but sometimes possesses whole countries and nations. When the interest in competitive athletics once passes the boundaries of the school yard or playground there is simply no limit to the territory into which it may extend. But this great expansion and extent of interest in my opinion changes the relation of the school authorities and the director of physical training to the whole subject. As long as the competitive exercises are confined to the school limits, and made a part of the regular school program as I have shown, the school authorities may well consider themselves responsible for the management of these exercises and the results that are derived from them. But when one school enters into competition with another the interest becomes so intensified, the training required so severe, and the risks run so great, to say nothing of the demoralizing effects upon the rest of the school program, that no school board or school officials alone should be held responsible for the results. The responsibility should be assumed mutually by the parents, school authorities, graduates and the boys themselves.

Having been taught practical lessons in self government through the school games of the grammar grades, the pupils of the higher schools should be encouraged to try and manage their own sports and athletic contests. This will be difficult to do at first and many mistakes and blunders will necessarily be made. If, however, each officer appointed will make a careful report at the end of the school year of his various duties, carefully recording successes, failures, and other experiences, in a few years it will be possible to outline a policy for the school in the government of its athletic affairs which would be very valuable. In order that more stability might be given to the school athletic organizations, as the students are necessarily a fluctuating body, an athletic committee should be appointed to have general supervision of such matters and keep the officers up to their duties. This committee might best be composed of three former pupils of the school who had had previous experience on some of the school teams, an equal number of undergraduates, the director of the gymnasium or supervisor of physical training and some member of the teaching force, and a member of the governing boards. This committee should draw up a code of rules and regulations governing the eligibility of players, time, place and conduct of games, duties of officers and general management of athletic affairs. Where there are to be interscholastic contests this committee, or certain members of it, should meet the member



of similar committees from the schools comprising the athletic league or association, and draw up regulations governing inter-scholastic athletic meetings.

These regulations should be published and made accessible to every schoolboy in the land who wanted to become familiar with them. As a basis for the establishment of some such regulations, the advantages of athletics over other forms of exercise and training should be frankly pointed out and acknowledged. The evils and dangers with which the practice of these exciting pastimes are almost necessarily accompanied should also be considered, and every possible arrangement should be made to mitigate them. What are some of the benefits to be derived from athletic contests in the secondary schools, and what are some of the evils to be contended with? Under such a scheme as I have outlined the pupils will have had a certain amount of all-round formal exercise in various kinds of calisthenics, gymnastics, and athletics. These formal exercises are intended to gradually train, strengthen and develop the different parts and organs of the body, and are as essential to a scheme of physical education as reading, writing, arithmetic and other fundamental studies are to a scheme of mental education. They furnish the best kind of preparatory training for the various kinds of athletic contests, as is borne out by the practice of professional athletes and the college ball teams, track teams and boat crews. Having developed the elements of power through the practice of formal exercises, they should be further developed, tested and applied through athletic contests and games. Here is where the boy first finds himself, and becomes acquainted with his own powers as distinguished from those of some other boy. In these contests he receives his first great stimulus towards self-activity and self-expression. They pull him out, as it were, and incite him to make greater and greater efforts. Formal exercises are given to youth for results which are to be realized largely in the future. Athletic contests are objects of immediate interest and furnish a definite purpose for action. If wisely chosen they also furnish an immediate incentive for the cultivation of special powers and the improvement of special weaknesses and defects. In team play, especially in the highly organized games, admirable opportunities are afforded for developing many excellent traits of character. In formal exercises one movement follows another in regular sequence through lines which have been carefully worked out beforehand. In games no two plays or combination of plays are exactly alike. One can never know just what his opponent is going to do, yet what one's opponent does changes the nature and direction of the game. Each player must decide when and how to act in every exigency that arises, and he must execute

his decision promptly and energetically. Alertness, quick perception, forced and prolonged attention, great self-control, self-direction and even self-sacrifice are often called for, and correspondingly developed. It has been well said by Inspector Hughes in his admirable address entitled "Physical Training as a Factor in Character Building" that "no other school work defines energy of character more than athletic games. By playing games boys learn to bear defeat bravely, and to work harder for victory to-morrow, because it has not been won to-day. Final triumph won by persistent practice and patient effort for success fills the young character with the faith and hope that are so essential in the life struggle of later years. The athletic playground is the best place for developing the consciousness of individual power and responsibility, and forming apperceptive centers in the mind around which may be gathered ideas of the highest social import—co-operation, or the organic unity of the race. The boy who is a member of a cricket, lacrosse, baseball or football team learns in the most definite way that the more completely he develops his powers and the more perfectly he can perform his part the more certain his team is to win. He learns, too, that one weak player weakens the whole team. Each member thus learns more surely than he could in any other way the lesson of individual responsibility, and the value of individual power and individual effort. He learns, too, the higher lesson of unity, or co-operation as the basis of complete success. Victory results from the combined efforts of thoroughly trained individuals who are working heartily for the accomplishment of a common purpose. Playing games governed by well defined rules trains character by developing a spirit of hearty submission to law."

The high mental and moral qualities as well as the physical stamina acquired through the practice of competitive games has of late years attracted the attention of our great financiers and men of affairs, and many of the college men who distinguished themselves in athletics have been invited to take positions of great trust and responsibility. The knowledge of men, the energy of character, and the executive ability acquired through the practice and management of athletics is of the greatest value to young men who wish to prepare themselves for a business career. I remember of hearing the superintendent of schools in a neighboring city say in a public address, that his son tried for a week to get a position in New York City upon the strength of being a Harvard graduate. Finally he happened to mention that he was also stroke oar of his class crew. This—or rather the qualities supposed to be back of a man who could win and hold by hard work such a trying position—secured him his job in the great city. Considering that the great majority of school and college youths

are fitting themselves for a business career, where push, energy, courage, coolness and a rapid and responsible exercise of judgment under trying circumstances counts for so much—it would seem that vigorous training acquired through the judicious practice of athletics would be almost invaluable.

Most of the objections which have been made against athletics have arisen more from their excesses than their legitimate uses. Nevertheless, there are certain well founded objections which are worth considering. No one will deny that it is a good thing for a boy to learn to run, jump, row, swim, play ball, etc., and to practice these valuable exercises within reasonable limits. But when they become so all-absorbing as to demand most of one's time, energy and attention, they defeat the very object of their introduction into our schools and colleges. Those of us who are engaged in making physical examinations have observed the tendency of certain forms of athletics to produce certain mental and physical results, such as increased energy and activity, sometimes engendering a sort of physical restlessness, increased muscular strength, increased length and girth of trunk and limbs, increased strength and capacity of heart, lungs, stomach and brain. When these same exercises are overdone and the athlete is thereby overtrained the extreme mental activity relapses into mental dulness or into nervous irritability and lack of control, the weight falls off and the muscles cease to develop, the heart may become enlarged or unduly dilated, the lungs become congested, the stomach refuses to do its work and the whole man is upon the verge of a general collapse. The physical and mental condition that follows what may be called an acute attack of over-training, may result from prolonged activity carried on for a term of years, in which case the injury is more lasting. It is a familiar anatomical fact that all organs and parts of the body develop in proportion to their use. Thus, the oarsman increases the size and strength of his legs and back, and the gymnast his arms and chest. After this special development has been carried to a certain extent, the parts that have been robbed of their just share of nutriment, in order to sustain the increased life of some other part, refuse to work unless they can have their proper supply of food. In this way the weak part that always gives out in a supreme effort becomes established. Given a hundred boys who are trying to out-run, out-jump or out-row each other. The boys will come to the front whose peculiar organism most readily adapts itself to the special sport in which they excel. Of course, ninety odd per cent. of the boys will fail to reach the performance of the best for the lack of the particular organism required. If the rivalry was intense, however, and the 90 per cent. kept on

trying, a large portion of them would fall out in the struggle, and a certain per cent. would surely injure themselves in the attempt. There would be no honor in making a record in any athletic sport or of becoming a member of a victorious athletic team, if it were possible for all the boys in the school to do the same thing. In this case there would be no distinction. Where the great desire is to break a record, win a prize or gain the championship, it is perfectly natural that an ambitious boy would put forth every effort to accomplish the end in view for his own advancement. And when it is considered that the attainment of such distinction would bring honor to family and friends, to class, society and school—urged on by coaches, and trainers and admiring comrades, the pressure that is behind one's best efforts is tremendous. Under these circumstances it is not surprising that some boys do over-do, and are consequently injured thereby.

This is all the more likely to happen in the youth of our secondary schools, as I have already intimated, in consequence of their immaturity. It is a well-known fact among anatomists that the important bones of the skeleton do not consolidate until the ages ranging from 18 to 25. Until this consolidation does take place the different forms of the frame work are susceptible of great improvement under judicious exercise and training. But the same bones are just as susceptible of injury, or of being deformed, if the exercises and training are not judicious. Specializing in athletics at too early an age tends to produce skeletal defects and deformities, which are easily recognized, and which often call for corrective treatment to prevent them from becoming permanent. The ordinary sprains and injuries that occur from the practice of athletics in early youth are not of so serious import because they are easily recovered from. But the most serious injuries which are likely to occur, where athletics are over-done, are those which affect the vital organs. The heart has to stand a greater strain than any other organ during the period of puberty and throughout adolescence to adult age. The average weight of the heart from

7	to	14	years	is	4.25	oz.
14	"	20	"	"	7.61	"
20	"	30	"	"	10.06	"
30	"	40	"	"	11.36	"

During the period of puberty the heart actually doubles in size. From this period until 18 years of age the development of the heart is less rapid, and frequently does not keep pace with the growth of the trunk and limbs. The greatest progressive development of the heart takes place between the 18th and 25th year.

The average weight of the lungs from

7	to	14	years	is	20.52	oz.
14	"	20	"	"	40.07	"
20	"	30	"	"	62.43	"
30	"	40	"	"	52.76	"

The liver, kidney and spleen increase proportionately in weight and consequently in functional power during the same periods. If extraordinary demands are made upon the heart and lungs before the 18th year, as occurs in distance running, or rowing, too frequent trials in short distance running, prolonged and persistent attempts at jumping, pole vaulting, wrestling, boxing, foot-ball, basket-ball or any kind of violent athletic contest these important organs are likely to be injured from over-work. The heart will become weakened and dilated, more or less violent palpitation of the heart will occur, and the breathing will be short and difficult, sometimes accompanied by pulmonary hemorrhage, and the individual will be incapacitated for any prolonged muscular efforts. The liver and kidneys may also be impaired in their functional capacity if greatly overworked before the age of 18.

But so great is the recuperative power of nature, especially in youth, that even the injury to these important organs may be relieved if the impairment is discovered in time and the cause of the trouble removed. If, on the other hand, the ambitious school boy has more sand than sense, and still continues his violent efforts in spite of the warning symptoms, he will not only incapacitate himself for all college athletics, but he will incapacitate himself for his life work. This sudden breakdown is much more likely to occur if the boy is ambitious to stand high in his studies, or to win social distinction at the same time. In fact, it is most always athletics plus some other strain or draft upon the heart or nervous system that occasions the collapse. Now for the treatment of these cases is very simple if they can be taken in time. It consists of complete cessation from all violent efforts from six to twelve months, complete rest in a recumbent position for one or two hours in the middle of the day, and indulgence only in such exercises as can be carefully regulated and controlled.

Then there are certain moral objections which are often brought against athletics. In the opinion of many the prominence now given to athletics by the press and public, the praise and adulations bestowed upon individual athletes by schools and colleges, the commendation of friends, the worship of comrades, the celebrations and banquets are having a demoralizing influence upon a large class of our youthful population. A young man whose good work in the class room never attracted attention, whose social charms and accomplishments never brought him into notice

suddenly finds himself raised to distinction by an athletic victory. He feels for the first time in his life his own importance, and with this sense of importance comes an increasing appreciation of the method by which he has risen. Henceforth this young man's presence may be required in the recitation room,—but his mind and thoughts are occupied with the scenes of his ephemeral triumphs. It is claimed that athletic contests not only fascinate the participants but allure hundreds of non-athletic youths from their studies, and thus interfere with the serious intellectual work of the schools. The protestations of the instructors are of no avail, for on the subject of sports the whole country seems to be against them. Moreover, many teachers have felt obliged to ally themselves with this athletic movement in order to have any influence over their pupils. Some of these objections may be well founded, but others are not. The newspaper prominence given to school-boy athletics in this vicinity has been greatly modified within the past few years. During the school season just closed, there were by far more pictures of school-boy and girl orators, poets and class-day officials, published in the newspapers, than school-boy athletes. The adulation of physical vigor and athletic prowess and agility is perfectly natural to youth, because it is youth's own province. All the glory of this kind that is ever attained must be necessarily attained in youth, because adult age brings other duties and responsibilities and a growing disposition to use the mind more and the body less. In my opinion a much greater evil in connection with school and college athletics than any that has been mentioned is the tendency to magnify the importance of victory, and to be indifferent to the means by which it is frequently attained. A victory won by hard work and faithful training—which is only another term for correct habits of living, is deserving of the highest approbation. It indicates better blood, better muscles, better brain, better everything that is worthy of emulation and perpetuation whether possessed by our own teams or their opponents. But attempts to prevent the triumph of these good qualities through trickery and fraud should meet the condemnation of all lovers of manly sport and manly virtue.

The pernicious custom of betting is partly responsible for the desire to win at all hazards, and although there is very little betting among the supporters of the school-boy athletes, there is enough of it among our college students to give a peculiar coloring to all forms of amateur sports. The acknowledgement of a foul or a fault on the part of a player is not yet considered a point of honor, and any little trick or deception that may be resorted to to help win the game is quite readily overlooked or forgiven by the supporters of the victorious team. It is well

known that in base-ball much of the coaching that is given to the men running bases, and the cheering and music that is supposed to keep up the courage of the favored team—are really given to rattle and disconcert the opposing players. This line of conduct has nothing to commend it, and greatly detracts from the interest in the game. The base runner should be sufficiently alert to find his way unaided around the bases, and the cheering should be reserved for meritorious performances of work well done. To keep up a continuous volley of cheering, shouting and cat-calling throughout the progress of an athletic contest in view of giving courage to one's own team and striking terror to the hearts of their opponents is an empty and a silly custom. It can only be compared to the beating of the tom-tom in early Indian warfare to fire the hearts of the braves, or the blaring of trumpets, clanging of gongs and the beating of drums and other ear-splitting instruments with which the Chinese soldiers formerly hoped to frighten away their adversaries.

Another evil in connection with secondary school athletics is the readiness on the part of some of the school authorities to use the athletic teams as a means of advertising the school. This is an evil, however, that pertains rather more to the private than the public schools. To have a victorious base-ball nine or foot-ball team is thought to reflect credit upon a school, and attract the attention of parents who wish their sons to have a good physical education and be made strong and vigorous. But when it is considered that in most schools the athletic teams represent no one but themselves, that the members of these teams, usually have good physiques when they enter the school, and that little or nothing is done to improve the physical condition of the great majority of the pupils, who really need it,—the hollowness and insincerity of the whole affair becomes painfully apparent at least to the teachers of physical training. When the desire and enthusiasm for victory are carried so far as to lead to the importation of athletes for the purpose of playing base-ball, foot-ball, etc., in order to secure a winning team the sports have lost their significance, and the whole transaction reflects nothing but discredit upon the institution and all who were instrumental in bringing it about. The moral effect upon the pupils and the school community would be much better if the whole athletic team were hired outright to play for their amusement, for this method of securing athletes would be at least honest, whereas the methods that are sometimes resorted to, to draw athletes to a school and pass them off as bona fide students are thoroughly dishonest, and are always followed by a train of evil consequences that are ruinous to amateur sport.

Happily through the vigorous method pursued during the past

dozen years to check this evil, it is now somewhat abated, but strenuous efforts would still seem to be necessary to demonstrate to some of our youth the utter uselessness of victories secured through other means than honest efforts where the best men win.

In conclusion, it seems to me that the most desirable thing to do at the present time is to get the whole subject of athletics out of school and college politics and treat it on its merits as an essential part of a complete system of physical training. This implies at once a recognition of the importance of the subject, and a consideration of the good points to be preserved and the evils to be eradicated. It also implies the hearty co-operation of the school authorities, school graduates, parents and pupils (as we have already indicated), in an attempt to regulate and control. With a determination on the part of those most interested in the welfare of our youth that these sports shall go right, much good will result from the practice of these invigorating exercises. On the other hand, if they are left wholly to the management of inexperienced youth, or to men who wish to exploit them for their own advancement, or to cater to the popular love of excitement and amusement for a pecuniary consideration, the good resulting will certainly be mixed with evils which will be detrimental not only to those engaging in athletics but to the cause of general education in our schools and colleges. Will our secondary school authorities have the good sense to realize that athletics cannot be eliminated from school life, and unite with others in trying to check the abuses and direct the uses of this important adjunct in education. I cannot help thinking that they will.



## THE BIOLOGICAL ASPECTS OF ATHLETIC SPECIALIZATION.

LUTHER HALSEY GULICK, M.D.,

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We cannot understand the relation of specialization to physical training without discussing first its place in the whole biological scale. Specialization is the root of all evolution. It is only in proportion as the lowest forms of animal and vegetable life begin to set apart cells for distinct activities that they rise in the scale of efficiency and intelligence. Certain groups of cells being segregated to do special actions acquire far more skill in such actions than is otherwise possible. This is much to the advantage of the organism as a whole. Thus we find a constantly increasing specialization going on in the human individual. When we examine the adult human body, we find a high degree of cell specialization. The white blood corpuscles appear to be in much the same condition that the undifferentiated protoplasm that forms the background of the race is in. But other tissues are made up of cells that have become so highly differentiated from these forms that it is with difficulty they are recognized. The contractile function has been specialized by certain groups of cells. In securing this greater efficiency in contracting ability, the other physiological functions of undifferentiated protoplasm have been largely lost, and even in the contractile tissues there has been specialization, in the muscles of voluntary contraction, in the involuntary muscles, and in the branched muscled cells of the heart. Similarly, the cells have been specialized for the supporting tissues, the bones and ligaments, and all the finer structure that ramifies through the body and holds it in place; the cells that have been differentiated for the nutritive tissues that make the digestive juices, the blood glands, the skin, then the co-ordinating tissues, the wonderful organization of the brain, spinal cord and sympathetic nervous system. In all of these we find merely the highly specialized cells; even in the long, white fibres of nerve that run from the cord to the foot, there is but a single cell that has stretched itself out in a minute fibre spanning this distance, an irritation of one end being transferred immediately to the other end. This is a specialization of the conductive function. The brain has been so highly specialized that the parts cannot produce. A brain cell once damaged cannot be replaced by a multiplication of other cells. In the case of the

skin the opposite is true; the specialization has not been so extreme that the reproductive function has been lost. In some of the other tissues the reproductive element remains, so that losses can be made good, but it is a general rule that if a tissue is exceedingly specialized along a single direction, its other functions, including that of reproduction have gone. Then, again, a certain group of cells in the body has been set apart for the purpose of retaining all the physiological processes of the characteristics of the race, and an elaborate neuro-muscular and glandular apparatus arranged to handle them. These are the reproductive cells.

Thus, it will be seen that the whole development of the individual has been related to specialization, and that the development of intelligence, of feeling, and of the will has been related to specialization. It is idle, then, to attempt to build up individuals upon any other hypothesis than that of specialization.

We come now, not to discussion of the relation of the cells of the individual to the whole, but to the relation of the individual to the social group of which he is a part. Is it true that that which has gone on in the individual, the differentiation of the minute elements of which he is composed, obtains in the larger group—the social organism? We do not need to go far into the study of either history or sociology to see that the same law holds true. We must go far back in history to find the time when there is not specialization, when every family is complete in itself and needs nothing from the others. Individuals are soon specialized for certain functions. Soon we have the warrior specialized to defend the tribe, or to secure supplies by conquering neighbors, and then we have individuals specialized with reference to trading and the conveying of products that are usually made at one place to others, and we have the merchant and trading group; so even in savage society we find a considerable degree of specialization that corresponds as exactly to the individual as a whole as the cells do in the individual. We find individuals having particular abilities set aside by the community for the exercise of that ability. Persons having such ability are able to do the work better than those not having the ability, and thus they are compelled to do something else, and the whole progress of society, the whole evolution of the social organism, is related to this specialization of the individual and his ability to do given things with greater and greater perfection. This obtains in the world of scholarship, religion, letters and war. In every department in which advance is being made, men are devoting themselves to smaller problems, to work to which they have been both adapted by education and heredity, and are doing it with increased perfection, so that specialization is a fundamental condition of the whole progress of the race.

Let us turn again to specialization in the individual, and observe the effects of attempting to build without specialization in the parts of the body. Let us endeavor to have the left arm as strong, as skillful, in every way as is the right arm. The practice that is now given to perfecting the right arm in penmanship, in playing the violin, in working with machinery, and in all directions that demand skill, must now be divided by two, in order that the left arm shall be equally well trained. Even this would not accomplish the end in the present stage of evolution, because in most men the neural apparatus of the left side of the body does not have the tendency to its organization that the right-hand side does. If we should succeed in our endeavor to perfect the left hand correspondingly to the right, it would be at the cost of a large degree of skill on the part of the right hand, and at what gain? The individual as a whole is not more healthy, he is not more efficient; he has two members, both members both able to do the same thing, and yet he has need but for one of them at a time; it is then a waste. So we find nature is economical and endeavors to make her practice useful, and does not waste time in perfecting the left side of the body to do work for which she has specialized the right side. This illustration must suffice to indicate the limitations of the desire for all-round training.

The whole evolution movement of the day appears to be in the same direction, being towards specialization. It used to be thought that a man should take the whole of a college course, and should then begin to specialize, the college course being related not to any particular line of thinking, but all-round culture or training. The modern elective system, beginning with having electives in the senior year, has been adopted, until not the whole college course is elective, and the modern college is far removed in ideals from the old college. Men are expected to specialize upon certain branches of interest, and we are already commencing to see specialization coming into our high schools. We see commercial courses, classical courses, and scientific courses, and even in these courses special electives offer. There are some who view this specialization as that which will militate against the efficiency of the individual. They think that, while it may be true that it will result in more perfect machinery for doing given work, it cannot fail to reduce the standards of manhood and womanhood.

What are the limits of this specialization? What principles underlie the relation of symmetry, harmony and specialization? Let us turn again to specialization in simple form, as we observe it in the cell. When this specialization goes on, we find one function being increased in efficiency and the other functions being decreased in efficiency, but we never find that the nutritive ability of the cell is interfered with. We find that the cell has to have its

food in special form prepared by other cells, but the ability to convert inert matter into living protoplasm must be retained by every cell that continues to live, and the highest degree of specialization is intimately concerned with this fundamental organic requirement for life. We find this same fundamental organic need conserved in the specialization of the individual as a whole. When in the evolution of the modern city the nutritive ability of an individual is interfered with by the excessive specialization, then we find the decay and dissolution of the group involved rapid and certain, but any degree of specialization that does not violate this fundamental condition of nutrition does not seem to be at variance with the best needs of the organism as a whole.

In what way can specialization interfere with the nutritive ability, the metabolic ability of the individual, the ability to convert food into active, highly endowed protoplasm? In what ways may specialization interfere with this fundamental nutritive ability of the organism? If it interferes with the respiration, so that the blood is not kept free from carbon dioxide and thoroughly oxygenated, we have a common case of interference with the nutrition. The tissues of the body rapidly degenerate because not supplied sufficiently with oxygen. Thus specialization which leads to the breathing of bad air, or to positions of the thorax interfering with respiration, has violated our fundamental condition. Those specializations which interfere with the circulation by producing hypertrophy of the heart, or irregular heart such as we find where it is compelled to work under pressure, is another form of specialization that violates our fundamental condition. Where the energy of the system is drafted off to such an extent through muscular channels that the more fundamental centers that have to do with organic life are deficient in power, a condition of asthenia supervenes that is not to be tolerated. This we often find in individuals who have over-trained. Where these fundamental conditions are conserved, where the specialization does not come in to interfere with respiration, circulation, digestion, nor the control of the organic life through the nervous system, we believe specialization to be not only harmless, but eminently desirable.

Bodily symmetry is not so desirable as bodily harmony. The body is symmetrical when the two halves are precisely alike in form and function. This we never find; even the two sides of the face are different; the two sides of the brain are different; the limbs are never precisely alike, and in function they vary from one another even more than they do in structure. The most perfect statues are non-symmetrical. Figures of faces in which the two sides are made exactly alike appear to be lifeless. Differentiation even here has its fundamental place. Harmony is where

the different parts are properly related to one another so as to produce a whole in which every part is exactly adapted to perfect co-operation with every other part. This we regard as the highest ideal.

If one attempts to judge any form of athletics with reference to this standard, one must ask first, does it violate any of the fundamental conditions of organic life? Or, to put it positively and more fairly, does it favor the fundamental conditions, the fundamental necessities of respiration, circulation, nutrition, and nerve action? If it favors these, it is useful from the physical standpoint. If at the same time it interests the individual, it is probably useful from a psychical standpoint. It is a matter of comparative indifference that a man should always jump from the left foot, or that he should use his tennis racket with his right hand, or that he should always do the wolf vault to the right and the flank vault to the left. These things do not interfere with the organic conditions of life, and they do favor the contraction and relaxation of muscle which we have seen to be associated with healthful living. To make the left arm equal in measurements to the right may not even please the æsthetic sense; it certainly is but little related to health and vigor, but to put the thorax in the condition where the heart and lungs will operate the most freely is a matter of the greatest importance. To keep the spine in that position in which the abnormal organs shall all be maintained in normal position is also of great concern, and yet in past years we have given far more attention to the mere matter of equalizing muscular measurements or muscular strengths, and but secondary attention to the larger matters that are related to the somatic life of the individual.

#### DISCUSSION.

ELIZA M. MOSHER, M.D.:

I have listened to the excellent paper of Dr. Gulick with pleasure. I cannot think, however, that there is much opportunity for differentiation in gymnasium work during the early years of student life. The body surely must first acquire equalized development, and this can only come from "all-round work."

It is a fact that in no person are the halves of the trunk and face symmetrical. This is largely due to the awkward habit of standing on one and the same foot with the other thrown outward, and from sitting with the pelvis rolled to one and the same side habitually rather than to unequal muscular activity.

I like Dr. Gulick's distinction between symmetry and harmony, and agree with him that it is more important to acquire and maintain the latter than the former.

I recall the figure of a young man at Michigan University who spent most of his time while in the gymnasium upon the trunk and

arm work, and at the end of four years he had acquired a trunk quite out of harmony with his lower extremities. I presume it did not interfere with health, although it did with bodily harmony.

Dr. T. D. Wood—I was much interested in the first part of the paper in the suggestion of the analogy between the relation of the organic cells to the organism, and of the individual to society. I venture to say this in addition to what Dr. Gulick stated, that the important thing in the relation is analogy rather than similarity or exact correspondence. That is, between the relation of the cells to the organism and of the human individual to society there are a great many interesting and valuable analogies. They both have a biological basis, but they are different in many of their aspects and characteristics.

It seems to me of the greatest importance that as students of physical education and of education and life in general we should know all that we can about the biological foundation of life and the facts and principles of biology, and then we should be careful not to apply these principles too directly or too mechanically to the problems of human life; but the more we know about biology the more careful we will be in the applications that we make. It is significant that the sociologist, the historian, and educators in many lines are to-day applying so many figures and similes and analogies from biological science, but these we frequently have to interpret because the application may be considerably different in one case from what it is in another.

Dr. Gulick suggests that there would be waste if there were a development different from that which is in harmony with the process of evolution. We must distinguish between the process of evolution, which is unconscious and impersonal, and that part of evolution which we may call artificial evolution working through human knowledge and human thought, and there is nothing more interesting to-day than the modifications of or the additions to, or better yet perhaps, the co-operation with this natural process of organic evolution. which is possible for intelligent and thoughtful human beings. We may, in conscious human effort, run directly across or against these natural, instinctive and unconscious processes, these laws affecting plants and animals as well as man; or we may in our processes of education co-operate with them and obtain better results. We have no more interesting problem than that of understanding the process of evolution so perfectly that we may work in harmony with it; that we may contribute something which human thought and human intelligence may add to this natural process, and it shall not be interference, but co-operation.

With reference to specialization; this is a very perplexing prob-

lem. The tendency of the world is to specialize. Success in most lines comes through specialization and it is the law of organic life from the beginning. On the other hand the tendency of unbalanced specialization is to diminish power and capacity, more especially the tendency to human specialization which is not immediately balanced, or corrected by the natural process of evolution expressed through the process of natural selection, and there are tendencies in our modern life which make for a one-sided development without proper balance or compensation. It is neither bilateral symmetry nor functional harmony.

This practical thought occurs to me: Certainly those who receive the benefit from physical education which is desirable should be able because of this training, in the long run, to specialize more perfectly and more efficiently. I believe, however, that they will be able to specialize in that way if in the main the process of physical education has been broad and symmetrical and harmonious.

It is evident that many of the activities in the gymnasium as well as the class room must be special, but there is a principle which must be obeyed, and that is this, that specialization along one line shall be balanced by specialization along another, so as to produce in the process of specialization, before the individual goes out into the world, before the struggle in society, a certain condition of harmony, of equilibrium and compensation which is very important. We may specialize in our process of physical education so as to produce a one-sided organism. We may specialize on the other hand in such a way as to increase power and to produce symmetry of a broader and more efficient type.

We should preserve and improve our symmetry of mechanical structure where in the structure of the organism there is originally a corresponding bilateral structure. To preserve this means economy. It means economy of power, but where we have to do with function rather than structure we must seek for harmony and balance and compensation and power rather than any other form of symmetry alone. If the individual has to use the head for ballast so as to keep the body straight (and this is so in some cases of asymmetry of the skeleton), there will be less power to use for other things. there will be less of this balance of power which will be accomplished by the mechanical structures, there will have to be more conscious or unconscious effort to keep the center of gravity over the base and the individual will use up muscular power and nerve force which might be used for other things more worth while and the head will be less free to do many of the things of which it is capable, and for that reason it is worth while to have, from the foundation up, just as perfect structural sym-

metry as possible, and to express through this mechanism as much functional harmony and organic power as education can make possible.

JAKOB BOLIN:

Permit me to say that this is probably, in a general way, the most interesting paper ever presented to this body. It opens up a wide vista, and should give us all considerable material for thought.

It is particularly interesting to me, because, by a somewhat different line of reasoning, I have arrived at somewhat the same conclusions as those of Dr. Gulick, though I am probably not willing to go quite so far as he.

Dr. Mosher will probably remember my assertions of last summer as to energy misspent in endeavors to conquer slight scolioses. The fact is, as far as I have been able to observe, that practically no spine exists in which we may not, by careful observation, detect a habitual lateral deviation with concomitant torsion. Similar asymmetry is manifested in the pelvis and the extremities without any noticeable interference with the individual's general health or vigor. When I see this; when I remember that the well marked asymmetry of the most important internal organs, lungs, heart, kidneys, stomach, and liver, is a result of slow phylogenetic development from perfect symmetry; when I find prominent evolutionists pointing out that there is a steadily growing tendency in the same direction in other organs usually considered bilaterally symmetrical (the degeneracy of the right breast and the greater susceptibility to temperature changes in the left than in the right hand may serve as examples); when finally my own personal observations, though insufficient to be made the basis of positive assertions, have proven to my own satisfaction that there is a very much greater bilateral asymmetry than is commonly recognized (I believe, for instance, that the persistent motor disturbances in infantile paralysis are more frequent and more extensive in the left leg than in the right, and that pronation and abduction are more common in the left foot than in the right); when I see all this, I come to the conclusion that man is gradually evolving into more and more bilateral asymmetry. If this be true, and we set it as our goal to develop perfectly symmetrical individuals, we mispend our energy and are doomed to failure, because we run counter to nature. I have always felt, in a more or less indefinite way, that much of the training for bilateral symmetry has been without value. I have always abhorred ambidexterity in writing and drawing. The same feeling, though less pronounced, I have for the endeavors of gymnasts to secure equal girths of the arms.

Like Dr. Gulick, I am consequently of the belief that a certain



amount of specialization is not only permissible, but imperatively demanded of us if we are to follow nature. Like him, I am unwilling to take the full step by saying that our pupils should be allowed to exercise asymmetrically in all the directions in which they feel inclination to do so. Like him, I might perhaps be willing to set the limit between what is permissible and what should be prohibited at the point where any of the vital functions, which make for vigor, is interfered with. But to make this admission is by no means sufficient for us as practical teachers. We must recognize the difficulty, not to say the impossibility, of pointing out exactly where this interference begins. As I have already said, I deprecate too great efforts to prevent or cure the mildest forms of scoliosis. They injure nobody. We all have them. But I deprecate still more such unilateral exercises which tend to develop curvatures. Even if a slight scoliosis is a normal phenomenon (and a great many men of prominence have believed that), and even if the racial development tends to emphasize it, we have to consider that racial development is a slow process and if it at any time be hurried by artificial means, serious injury is generally brought to a large number of individuals thereby. We can not afford to do anything which will cause asymmetry to grow; we must be the conservative agents guarding the individuals against the cruelty of nature.

Specialization becomes more and more necessary for our success. But, as Dr. Gulick has pointed out, specialization has its limitations, and there is a point before which it can not be begun if the best results are to follow. In order to become a successful specialist, a physician for instance will need a broad fundamental training. Otherwise he will very likely become a one-idea crank. I am sorry to see an ever-increasing tendency to specialization in even our lower institutions of learning. We all know that certain evils come from specialization. Surrounded by an atmosphere which is saturated with thoughts in a certain direction or on a certain topic we can not but become somewhat narrowed. Brought up in an atmosphere of Swedish gymnastics, it is for instance only with the utmost difficulty that I can understand the attitude of those who unlike me see the main object in our work in a direct mental training. And they of course reciprocate by being astonished at my stupidity. We see the same thing in religion, in politics, and everywhere else, consequently specialization has its dangers. Can we avoid them in our work? Only by making the specialization follow after a broad foundation of unspecialized work has first been laid. And I believe that we as gymnastic teachers have not as yet gone far astray in this regard. I believe that the very great majority of us have warred against too early specialization.

What benefits can we expect from specialization, which we do not receive from non-specialized work? Given the same amount of activity in both methods, I suppose there is nobody who would expect any better hygienic result from the former than from the latter. Many of us will tend the other way. But we will no doubt be told that the premise is only hypothetical, not actual. That specialization brings with it greater success in a definite direction, greater ability, and consequently greater interest. The greater interest will bring greater activity and consequently greater benefits. All that is true. Specialization is an interest creator. But only for the specialists. It is a murderer of interest in those who are not specialists. It appeals to classes and scorns the masses. But it is these latter for whom we should work first and foremost. It does not much concern us whether a man jumps an inch or two higher than another. It does concern us materially whether we can induce one or hundred to try jumping.

The long and short of my remarks then is simply this: I believe in specialization to a certain extent. I believe that there are those who run mad on the subject of bilateral training for instance. But I believe that the specialization must necessarily come late in the courses we offer. I believe it has practically no place in gymnastics proper, in the formal fundamental training. I believe it may be defended and perhaps promoted in the applied forms of physical training—the athletics and the sports. Even then I believe we must look upon ourselves as agents whose duty it is to stand guard against the too rapid specializing tendency of modern civilization.

DR. C. WARD CRAMPTON:

There is one feature of athletic specialization that appears to me to bear most forcibly upon the conditions of evolution, that is, that the victorious advance of Nature by the means of evolution is one of wholesale murder and its path is strewn with its victims. These are they who are unfortunate enough to be slightly or considerably out of line to vary, to be specialized or rather overspecialized in some particular feature or faculty to such an extent as to render them unfit to successfully combat with environmental conditions and to be particularly easy victims for our Mother Nature's pruning.

It is a statistically demonstrated law that the most variable from the "type" are the most vulnerable, unless the line of variation is such as to fit them the better for gradually changing environmental conditions. This applies directly to our work, conditions are changing in the close pressed life of to-day, "brains" count as never before, actual strength and mere vitality (save as they subserve mental vigor) are at a discount. We must not therefore

develop strength as a prime object but simply as a means of subserving the most useful function, our work is not to start up a side issue of physically specialized bodies, but simply to keep in line with the direction of evolution and conserve the function that gives the greatest general effectiveness, namely,—brain.

It is seldom that any of us keep strictly within the limits of this ideal, we go beyond it every day in allowing those within our care to progress more in the line of gymnastics or athletics than the actual culture of health and strength for the purpose of increasing brain effectiveness demands. We let them spend far more time and effort in the pursuit of mere athletic or gymnastic skill than could ever be warranted on the ground that they were spending this force in the pursuit of health, yet realizing as we do the danger of going beyond ideal limits we do so with a clear conscience because the stimulus of play and the stimulus of competition are so valuable that they are too effective weapons to lie idle. Nor, as Dr. Gulick's paper has so ably presented, are we to be alarmed at over-stepping the ideal limit, for specialization until it reaches a very considerable degree is not sufficiently dangerous to deter us from employing it.

There is a point in athletic specialization up to which we may allow those under our care to go, making use of this stimulus to gain for them the conservative benefits of the exercise but beyond which we may not go with impunity, for we will allow the development of a comparatively useless function at the expense of a series of vitally important ones.

This is what happens when we develop a Marathon runner or a crack horizontal-bar performer, this *costs too much*, this is pernicious over-specialization, this is almost a paralled condition that we see in the "idiots savants" where Nature has spent all her force in developing a minor faculty at the expense of all the more important ones. This is the danger extreme and one I believe is fortunately infrequently reached under our hands and is only one of the many important points that Dr. Gulick's paper has brought up.

DR. GEO. MEYLAN:

It was in Dr. Gulick's paper that I first got the idea of the difference between symmetry and harmony. I think that is one of the best distinctions that has been made in our work. As I compare the work of the physical trainers of twenty and thirty years ago with the work done to-day I think it can best be explained by that difference. They worked primarily for symmetry and we work primarily for harmony, giving due place and recognition to the question of vitality. This whole topic I think is one of the fundamentals in our work and I have been delighted with the paper and discussion.

Dr. Gulick said in closing—I believe that the major part of our problem is to get people to exercise at all. It is not as if every one was ready to exercise, and we had merely to determine the best form of exercise. Most people do not exercise. It is not a question so much of the precise best form of exercise, it is a question as to whether we can get them to exercise at all. It is only on this ground that I would advise my own little pamphlet entitled, "Exercises for Busy Men." It is superficial, imperfect, and inadequate as compared with Gymnasium Athletic work, but it is far better than nothing and the men who are using it are accomplishing more than if they took no exercise at all. So the point of my paper is unintelligible excepting upon the basis of considering the maintenance of interest.

I am surprised at my own lack of clearness. The mental state in which I was when I wrote the paper assumed certain things which I did not convey to you. I assumed general all-round physical training. I assumed that in addition to that, boys in high school and college particularly and the Y. M. C. A. wanted to do pole vault and mile run, and business men wanted to bowl and other people wanted to ride a bicycle and other people wanted to swim and I was trying to formulate some principle by which we could say where the line should be drawn with these individuals. Where shall we say, "Stop, you had better not go on; you had better give up the exercises." If I can get a business men to bowl, although I know he bowls with his right hand, I would rather have him bowl than to take no exercise. I would rather have him not bowl when he violates the fundamental condition which I have already mentioned.

## A GROUP CONTEST.

C. WARD CRAMPTON, M.D.,

Director, High School of Commerce.

On February 14, 1903 the High School of Commerce held a Dual Meet with the Commercial High School of Brooklyn, a meet which in some important respects was different from the usual form of athletic, gymnastic or physical training meet or contest. There were 50 boys on a side, each one of these competed in all five events and the meet was decided on the average performance of all 50 contestants.

This meet was the outgrowth of an attempt to meet the conditions that obtain in all our high schools and colleges and that have been the subject of so much careful work and investigation by physical trainers.

The conditions are briefly these—Athletics and athletic games as now constituted demand the development of a single man or team of restricted numbers. To the development of winning men is put all the energy of captain and coach; a call is made for candidates; certain few respond, are looked over and if too many, are weeded out; after a few weeks, more are weeded out and the process goes on till only the Varsity string is left, three or four men for each event out of the many who apply. (and the very many more who do not). These get all the exercise they need (and possibly a little more) but these are they who are physically fit, strong and well trained before they enter the trial for the position on the team. No trainer wastes any time on poor material if there is any other kind at hand. The ones who never see the coach are those who need his attentions most; those who see him most are those who need him the least. Thus all the benefit of athletics goes to the very small proportion of the college membership and the great part 75 per cent. to 90 per cent. who need it most are deprived of it more or less completely.

This is a waste of effort and opportunity; and it is undemocratic, *radically wrong*. The excuse that it is the affair of the students alone and does not concern the faculty in any way is a mistake, for nothing concerns the faculty so directly as the neglect of an opportunity of making useful this great force of student enthusiasm and interest.

Some way must be devised whereby the whole needy membership of the school can be brought to train in an athletic way and gain the benefits now derived by the few. This

\* NOTE.—The use of the term Group Contest, as applied to this form of competition, is perhaps inaccurate. A line might well be drawn between those contests that are between groups (such as classes, schools, etc.), where *every* member of the group competes, and those competitions, of which this meet is an example, where a large team is chosen to represent the class or school. These latter might be better distinguished from the former, the true group contests, and given some name similar to "Large Team Competitions," or "Representative Team Contests." Both of these forms of competition, however, have the common feature, that each member competes in the same way as every other; there is no division of labor, as in the usual teams playing basketball or football.

system must take into account various factors and meet certain conditions. The only plan for arousing such interest as will induce the systematic training involved is some sort of test or competition, individual, inter-class, inter-scholastic, or intercollegiate; the best being the contest as a whole school or college against an outside and a natural opponent. To introduce a new or comparatively new game for competition, such as captain-ball, center-ball, etc., would of course not meet with success for it would not command the same interest as an accepted sport would and it would be difficult to get an outside competitor. The competition should have its main points at least familiar enough to arouse and maintain popular interest.

It would fall short of the best use of opportunity to spend the whole effort of training in the development of one particular feature, as for instance running, while the competition might instead be made to include many features with many different chances for valuable improvement; so the competition should be as all-round as possible, and should be thoroughly consistent with the demands of the maintenance of interest (with which it often conflicts).

Thus the ideal demands that the many rather than the few should be trained and this should be in competition with a natural outside competitor in some standard sport or sports which should require to some extent development in an all-around way.

The method of competition carried on by the writer for the two previous years between classes in an annex of the DeWitt Clinton High School in which every one in all of the classes took part in the various athletic and gymnastic events and the average performance of the class was used as a basis of comparison and competition, suggested a similar competition between schools.

The plan as finally outlined to the school and presented to the other schools of the city as being the most feasible one for meeting the requirements was as follows: Twenty contestants were to be chosen from each of the five corresponding terms of the school (five of the boys were to be under certain height and weight, i. e. "Midgets"); these teams were to form a school team of 100 to meet at an armory in the city during the Winter; they were to compete in five events, namely basket-ball, standing broad jump, relay race, shot-put, and the "fifth event" (constituted principally a mark given for standing position); a cup was to be awarded to the winning school and medals given to the members of the term teams of twenty whose term record was higher than the record of the corresponding team in the other school.

This plan, simple as it was, was too much for most of the schools of the city who were unwilling to leave the beaten track, with the exception of the Commercial High School, where an effort had already been made to develop all the students by the means of

inter-class basket-ball. Even here it was deemed too much to attempt to bring out teams of twenty, so half that number was finally decided upon.

**PREPARATION FOR THE MEET**—The plan of the meet as outlined was apparently simple, but the lack of any guiding precedent, and the difficulties presented in the disposition of the many contestants, the management of the different events with the necessary adjustment of the scoring, made the matter appear quite formidable.

In preparing the teams, the plan was outlined before the whole school, candidates called and given separate days for practice (two a week) under the direction of tutors who volunteered as coaches. Two weeks before the meet the teams were picked and coached in team work in basket-ball and assigned their positions. Two days before the meet the team was assembled, given type-written instructions concerning their movements on the night of the meet, and everything was explained in detail.

In the armory five basket-ball courts were marked out, five sets of goals were procured from other armories, marked with the number of the team that was to use them, and set up ready for use. A shot-putting ring was made and from this was marked on the floor a scale of feet and quarters up to 40 feet. A rubber jumping strip was prepared marked with feet and inches measured from the edge of a board to which it was fastened and on which the competitor stood when jumping. Two parallel lines, five feet apart inside the circle of the running track, were drawn and numbered from 1 to 50, corresponding to the number of the competitors, and with space enough between to allow each man to sit down without interfering with his neighbor. These were to be the places of the competitors when on the floor and not engaged on any event. This gave each school team, with its component term teams and every men in them, definite places where they could be found without any delay and thus did away entirely with the looking for contestants, which mars so many meets and which would have been absolutely fatal to a meet of this sort.

Each term team of ten had a lieutenant who did not compete but who brought on the floor all necessary bath robes, shoes, etc., which were needed by the competitors, and piled them near the place for his team. He also attended to all the wants of the competitors, who were not allowed to leave their places under any pretext whatever. Each school team, with its lieutenants, was under the direct charge of a "Captain," who was responsible for all the details of the team under his control. He directed all the movements of his team as a whole and sent the different term teams to the start of the relay race when that event was called.

The twenty lieutenants and two captains met the Director (the writer) a day before the meet and were presented with detailed

typewritten instructions, and the plans were gone over in detail so as to allow of no possible hitch or misunderstanding. The various judges of the different events, with all referees, umpires, scorers, timers, announcers, were mailed typewritten details and directions of everything that was to be done by them in the discharge of their duty.

These detailed precautions were taken to insure the perfect progress of the meet without any of even the more usual delays that are likely to occur in an ordinary meet. They bore fruit in the result that it took but one hour and twenty-five minutes to bring the program to a conclusion, without having a delay of any kind from the start to the finish.

**THE MEET**—The contestants assembled in separate dressing rooms, dressed, gave their bath robes, etc., to their lieutenants, received their numbers, formed a line in the corridor, term after term, in numbered order, the first term with numbers 1 to 20, the second with 11 to 20, the third with 21 to 30, etc., ready to march out on the floor of the armory. Here the captains called the roll and filled all vacancies. Upon signal, the lines then marched out to their numbered places on the floor. Here the five basket-ball referees, who were waiting for them as per instructions, took the first half of each term team (five boys, twenty-five in all) of each school to the basket-ball court where it was to play its game. At a whistle from the Referee the first game of basket-ball commenced and lasted fifteen minutes, ending, as it began, on the signal of the Referee. The Referees led the teams back to the places in line where the other contestants had been seated waiting. On signal from the captain the whole lines moved, with the first team at the head, one school to the standing broad-jump board and mat; the other to the shot-put, where they were taken in hand by the judges and scorer of those events.

As soon as a competitor had jumped or put the shot, he made his way back to his marked place, under the eye of his lieutenant, and awaited orders, and when the first term (the first team of the line) had reformed their line they were led to the start of the relay race without waiting for the rest of the school to complete the field event. The relay races were run off by terms, one lap to a man, ten-twelfths of a mile in all. As each man finished he was hustled back to his place by his lieutenant. The first, second and third term relays were run off while the field events were being completed. These being finished and the lines reformed, the second half of the term teams, who had not played basket-ball before, were led out to the basket-ball courts and the second half of basket-ball was played for fifteen minutes, as before.

This over and the line reformed, each school moved to the field event that it had taken part in before, changing the shot for the



jump, and *vice versa*. The line here moved with No. 50 as the head instead of No. 1, so that the fifth term, which had not had the relay race, might finish first and go to that event directly, and the fourth term follow as well without any delay.

The relay races and the field events were completed at about the same time and the lines were reformed, the whole program being finished.

The judges of the fifth event, however, experiencing some difficulty in distinguishing the men of the teams apart, requested that the two schools might be brought up in "review" so that a better chance might be given to estimate their standing position. The lines returned to their positions and waited while the final score was read off. The decision rendered, the lines were broken and the meet was over, won by the High School of Commerce.

The different events were changed considerably to meet the requirements of the occasion. In basket-ball there were five courts on which the five terms met each other one-half (five boys) at a time. The regular 1902 rules were used, the only difference being that no time was allowed out and no substitute was permitted to take the place of an injured player. The relay races were run off term by term and the time of the winner and loser both taken. The officials were four timers, a starter and a referee with assistants. The standing broad jump was made on the apparatus described, under the charge of two judges and a scorer. Judge No. 1 stood at the take-off and observed fouls; Judge No. 2 judged the distance jumped on the marked scale and called the record with the competitor's number to the scorer, who recorded it in its proper place on a previously prepared sheet. In case of a foul no other jump was allowed, as it would possibly have taken up too much time; to penalize, however, three inches were deducted from the jump record. The shot-put was arranged in the same way, the shot falling on the marked scale where it could be instantly recorded by the second judge. A foul here was penalized by the deduction of one foot. "The fifth event" was decided upon marks given for standing position, facility of movement, keeping in line and the sportsmanlike conduct of the competitors, by the judges—Dr. Sargent of Harvard, Dr. Savage of Columbia, and Prof. William Stratford of the College of the City of New York. These gave a mark to each school team based on a maximum of 50, and also compared each term team with the corresponding term team of the opposing school, merely indicating the better, not in this case marking in percentages.

SCORING—A number of ways of scoring suggested themselves. In grading the shot and the jump, recourse might have been had to the tables of the Y. M. C. A., but this would have necessitated the looking up of each distance as the record was made and would

have taken up too much time. It would have been practicable to compare the average school records made event by event and to give the cup to the school that won the majority of the five events, but this would have allowed a possibility of unfairness; for one school might have won three events by a narrow margin and lost the other two by a large difference, really making a poorer performance, yet winning the cup.

The final plan as arranged was to allow 450 points as a total maximum, 50 for the fifth event, 100 for each of the others; the cup was to go to the school winning the greater number of points. In scoring the different events the 50 points for the fifth event were to be the averages of the points as given by the judges of that event. In the standing broad jump and the shot-put the average was obtained of the 50 performances, the "best" school average was given 100 points, the other average was figured as a percentage of that and given the number of points corresponding. For instance, the average jump of Commerce was 7.4982 feet, that of Commercial 7.1766 feet, giving Commerce 100 points and Commercial  $7.1766 \div 7.4982$  of 100, or 96. In the shot-put the averages were about 22 ft. 4 in. for Commerce and 21 ft. 11 in. for Commercial, making Commerce 100 and Commercial 98 points. In the basket-ball the total of the points made by each school in the ten games was taken and used in the same way to determine relative standing, Commerce making exactly 100 points and Commercial 58, giving the corresponding per cent. of 100 and 58. In the relay race the added times of the five teams were taken as a basis. Commerce's total time for the five relay races was 15'53" 1-5 (the distance travelled was five times 10-12 of a mile or 4 1-6 miles); that of Commercial was 16'3" 3-5. Commerce in this event gaining 100 per cent. The difference in time, namely 10" 2-5 seconds, was reckoned as a percentage upon the Commerce record, making 1 per cent., which was deducted from 100, giving 99 points to Commercial.

Commerce receiving 41 points out of 50 and Commercial 43 in the fifth event, the totals stood at the end 441 to 394 in favor of Commerce.

The taking of the score and the computing of the percentages was one of the difficult features of the meet. It was met successfully by having suitable blanks prepared with the numbers of the contestants of both schools, for the shot and the jump, and for the scorers of the basket-ball, the timers of the relays and the judges of the fifth event. These were handed to the Chief Scorer when filled out, and the averages and corresponding percentages made out by him. The Chief Scorer had the added task of comparing the records of the similar term teams to ascertain the proper disposition of the fifty medals. This was decided by the number of

events that each term taken separately had better or worse records than the corresponding term; not by the same method that was followed in determining the winner of the schools, which was that of reducing these records to percentages and comparing the total of these percentages. Of the five events, the Commerce fifth term won all, the fourth 4, the third and second 3, while Commercial's first term was the only one to receive medals, winning 3 out of the 5 events from the first term team of Commerce.

**RESULTS**—The results were as expected, 125 boys were in training at one time for this team of 50, and should the team have been of 15 instead of 10 from a term and 5 of them chosen from among the "midgets," a much larger proportion would have been training among those who needed it most, the undersized and weak. Among those who made their places on the team, 82 per cent. had never done any athletic work before, and among the remainder only one-half might have been called athletic. In this case at least the competition reached well into the large middle class of students, where it was intended to go.

What this meet did not do directly was to reach the undersized and weak who had no chance even for this large team. These were kept in training to a large extent by the additional stimulus of another phase of the same competition. This was the comparison of the first and the last records made in practice, whether the candidate made a place on the team or not, and the promise of a medal to be given to the one making the greatest improvement over his first trial. This was of course an individual competition, but one that effectively interested the weaker boys, who realized that they had the greatest chance to improve.

Another result obtained was the demonstration that a mass competition of this sort could be made to take hold of the popular interest. The armory was full enough to clear the heavy expenses of the medals, etc., by a good margin, and any who were there will testify to the tremendous enthusiasm manifested over the events, particularly the relay races and the basket-ball. The cheering and singing, according to the newspapers, had never been equalled save at the large college games.

Interest has been aroused in several high schools and colleges, as several inquiries and challenges have been received, one of which, the C. C. N. Y. Prep., will probably be accepted and run off as a triangular meet with Commercial or a separate dual meet.

The plan has several limitations. The size of the teams perhaps cannot be increased over 100 successfully, on account of the difficulties of management and the lack of interest to the spectators, who would lose track of the progress of events. Because of this limitation the plan would always attack the better equipped 50 per cent. of the school and leave the worse without

benefit save the stimulus of emulation. To counteract this one-half or one-third of the team might be chosen from the "mid-gets" or novices to get at this lower large percentage.

To get *all* the students interested, the writer plans, besides repeating this dual meet, to put into play during the season of 1903-1904 a competition that will, it is hoped, prove complete and effective in *this* direction at least. Various tests are to be taken in the gymnasias of the competing schools, much as in the college "50 strongest" competition, in some of the new tests of the colleges with some gymnastic and athletic events. The results to be compared term by term, and prizes of some sort awarded. Possibly some events, such as relay races, might be reserved for a final "Fest" in an armory, making a popular event. If possible, after this scheme has proved feasible, two examinations instead of one may be held during the year and the progress and improvement made, noted and made the basis of a competition instead of the actual records. This plan has many features that recommend it as well as many drawbacks, but it is hoped that it will become possible in the near future.

Inter-class competitions when conducted on either of these plans have a considerable value. They are easy to conduct and maintain a general interest, but afford by no means so great a stimulus as the interscholastic meets.

Among the further limitations of this plan of competition as carried out is that it is limited to competition between near neighbors, for it would be obviously impracticable to transport large teams of 50 or 100 to any distance. Fortunately most of the organizations that would be likely to take up this form of contest have no want of near neighbors in their own class.

To improve the meet in some of its details would not be a difficult task, for many points were necessarily crude, as the plan was entirely new and untried in practice so far as the writer knows. The lack of complete separation of the teams at times increased the difficulty of judging the "fifth event," and the fact that one trial only was recorded in the field events seemed a hardship to some. These points could easily be remedied; shirts of the school colors could be worn to designate the different sides, and, with the cost of perhaps 6 or 8 minutes, three jumping mats and three shot-put rings could be used and three records taken instead of one; though this would require the services of some twelve more officials.

These events, though chosen as they were on account of their all-round nature, their lack of strain upon the growing boys who took part and the ease with which they could be scored, all very important points, by the way, might be changed in character and number in any way to suit any occasion.

Summing up, it may be stated that this form of meet is prac-

ticable, that it fulfills the requirements of training a far greater number than the usual form of athletic contest, that it is capable of arousing an acute interest even when it is new and unfamiliar, and that it is applicable to almost any conditions. Further, the idea embodied is capable of being used in a yet more complete fashion (as outlined above), whereby the greater mass of our students may get what they so urgently need and which they are so persistently denied,—consistent athletic training.

The following statements in regard to this meet by representative men are both interesting and important:

"I do not think the contests as arranged for Saturday night will take the place of all interscholastic contests, although I believe it is decidedly a step in the right direction. At the present time the element of luck enters into the thing too largely to have it satisfactory to the competitors. I think if three trials each could be given in the shot and broad jumps it would be more satisfactory, although the time consumed would be large, but there is no reason why two or more competitions could not be arranged to go on at the same time.

"D. A. SARGENT, M.D."

"The scheme which you have for interesting a large number of pupils in athletic sports which appeal so strongly to the tendencies and instincts of youth has my unqualified endorsement. I believe you are taking a step in the right direction. If I were called upon to choose between the formal, uninteresting gymnastics of the class room and the active, energetic and interesting sports of the playground and field, I should choose the latter. I hope you will be able to carry this work on and with it to make observations that will help to create a healthy incentive in our youth for the right kinds of physical activity.

"W. G. ANDERSON, M.D."

"In thinking over the general program of your meeting, at which you so kindly invited me to officiate, I am satisfied it has much to commend it to more general use. The idea of having competitions of 50 or more students is not a new one, but one which has been slow to be put into practical form. The college gymnasium directors offered their trophy, as you know, for the 50 strongest men, not the single man.

"The contest you offered gave a fair trial of speed, strength and endurance; my suggestion would be to make more of form and skill as showing better condition, and leave for later years the test of endurance. The meet as a whole was well executed, but the duties assigned to the special judges, of which I was one, were not well defined or easily carried out, largely owing to the fact that the men were not in prescribed uniform and easily and at all times designated.

"WATSON L. SAVAGE, M.D."

"The attempt to devise methods to prevent the usurpation of athletics, and the interest taken in athletics by the public as well as by athletes themselves, by the specialists in athletics, has been repeatedly made. The problem is an old one. As far as I know the Swiss Gymnastic Association is the first one that has dealt with the problem successfully, having made the so-called sectional contest obligatory and the main feature of their national meet for years past. The rules are such as encourage each society to appear in the contest with as many of their men as are available. The contest consists of work in running, tactics and free gymnastics, apparatus exercises and athletic events. Each man from every section competing must enter into all these things, making the competition an all-round one. The small territory of Switzerland, density of population, good means of transportation have made this plan feasible and it has been a success there. In this country the North American Gymnastic Union has tried to imitate this plan by using its desirable points. The immensity of the territory alone is an obstacle however which cannot be ever overcome and which will militate against the plan of the Swiss Union ever being operated in this country without change. Your attempt is based, I take it on the very same principle. It recommends itself for gymnastic or athletic bodies in the same or neighboring localities. I commend highly the introduction into the scheme of a competitive game such as basket-ball. The attempt you have made to introduce a gymnastic element, in having good carriage of the body contribute toward the result of the contest, is to be welcomed and I think deserves enlarging. The method of doing it certainly needs improvement. I likewise can only approvingly speak of the attempt to introduce an ethical element in making the manly conduct contribute towards the result. Your attempt was especially favored by the immense structure in which you were able to hold the contest.

"In localities where such structures are not at the disposition of the contestants, the question as to whether those contests should be held simultaneously or in series of contests will have to be solved. Likewise a problem with which we shall have to deal is how the public is to be kept interested in a succession of contests of the same kind and whether a simultaneous contest will stay in favor with the public any length of time. On the whole your attempt was a step in the right direction and certainly a contribution toward solving the puzzling questions presented by athletics in public schools.

"E. H. ARNOLD, M.D."

## SOME STATISTICS FROM TWENTY-THREE UNIVERSITY AND COLLEGE GYMNASIA.

THOMAS ANDREW STOREY, PH.D.

Encina Gymnasium, Stanford University.

It is of advantage to a Physical Director to become acquainted with the conditions obtaining in other Gymnasias than that particular one in which he is at work. In certain sections of this country it is not a great task for one to make a personal investigation of a number of Gymnasias within the radius of a few miles, but ordinarily such a method of gaining information soon reaches its limitations. This is especially true for those men that are not situated in the older and more thickly settled localities. In such cases circular letters and special correspondence offer a very satisfactory substitute and is a method that is accessible to any one.

The statistics offered below were gathered by the writer from replies to circular letters sent out by him a year ago in an attempt to discover some of the sources to which it would be profitable to go in order to obtain information concerning various phases of Gymnasium experience. The results of that attempt are presented here in the hope that they may be of use to other individuals who have like interests.

Unfortunately out of sixty odd communications like that printed below only twenty-three succeeded in calling out answers. One can very quickly recall a number of University and College Gymnasias that are not included in the list below, which could offer valuable information. It is then frankly admitted that these statistics are incomplete in that more Gymnasias should be represented. But this is a fault that could not be avoided with this method of inquiry.

The accuracy of these data depends in each case upon the construction placed upon the writer's circular letter by the Director to whom it was sent; upon the care with which that letter was answered; upon the writer's interpretation of the statements made in those replies; and finally upon the fact that these data are something over fifteen months old.

It is to be hoped that these data will not be considered by the reader as comparative statistics of University and College Gymnasias. As has been stated above, these facts are rather to be used as directions indicating some of the sources from which it would be possible to gain more detailed information through correspondence or personal investigation.

(Sample of circular letter sent to sixty odd gymnasia.)

STANFORD UNIVERSITY, CALIFORNIA, February, 1902.

*To the Physical Director:*

DEAR SIR—I would consider it as no small favor if you should find time to fill out the enclosed blanks. Such information may be of service to us in planning our work here and it is for this purpose that we ask it.

Thanking you in advance, I am,

Very truly yours,

Encina Gymnasium.

T. A. STOREY, R. C. S.

(Blank enclosed in circular letter.)

Have you a gymnasium? How many will it accommodate? Is gymnasium work compulsory with you? Is credit given for the work? How much? What is the expense? Is a uniform required? Cost? Number of instructors in gymnasium? Special work of each.

No. of students taking gymnasium work?

Put a caret through the pieces of apparatus in the list below which are in use:

Horizontal Bar. Vaulting Bar. Parallel Bars (High). Parallel Bars (Low). Overhead parallels. Slanting Ladder. Horizontal Ladder. Horse. Buck. Swedish Bom and Saddles. Tumbling Mat. Spring Board. Rings, Flying. Travelling Rings. Trapeze. Kicking Disk. Punching Bags. Peg Pole. Batteau Board. Dumb-bells. Wands. Clubs. Bar Bells.

Add pieces in use and not on this list.

Put caret through games played by men taking regular work in the gymnasium:

Basket-ball. Association Foot-ball. Base-ball. Hand-ball. Track Work. Foot-ball. Fencing. Boxing. Wrestling.

Add games not on the list.

Do you have Military Drill? Is it part of gymnasium work? Under what conditions is it given? Bathing facilities, what are they?

Are you carrying on work in Anthropometry? What system do you use? Do you use the camera in such work? Any special investigation of problems in physical training?

Please give an outline of your equipment for such research.

Number of men doing special work? Character of special cases (Heart lesions, spinal cord, etc).

Apparatus for special cases. Please enumerate.

Is there a consulting physician in such cases?

Relation of Gymnasium to College athletics.

Are they under the same Director? What is the relation of the athletic coaches and control to the Gymnasium Director?

About what sum of money passes through the athletic treasury



during the year? How many men engage in your College athletics?

What proportion of these men take gymnasium work when the athletic season is over? Is athletic work under the advice of a physician? Employed by the University? Rubbing Rooms—relation to the gymnasium? Training Table?

### STATISTICS FROM DIFFERENT GYMNASIA

(BASED UPON REPLIES TO CIRCULAR LETTER).

Where Located.	Any Gym. for Men?	Capacity of Hall. No. of Men.	Compulsory?	Credit.	Fee.	Uniform Cost.	No. of Instr. for Men.	No. of Men at work.	No. of Varieties Appar. in use.	No. of Games Played.
California ....	Yes .....	320 .....	Partly	4 Units..	\$1	\$3.50 to \$5	4	1057 ...	18	3
Cincinnati ...	Not a Sep. Bld.	40 .....	No ...	1 to 3 hours..	.....	Shoes only \$1 to \$2.50	1	60 ...	17	6
Colorado.	Yes .....	50 .....	No ...	None ....	\$2	\$1.50 up	1	100 ...	16	8
Columbia	Yes .....	250 Crowded	Partly	No work, no Dip.	\$7	\$2.85	3	1400 ...	23	8
Cornell ..	Yes .....	230 .....	Partly	2 hours ..	.....	.....	2	500 (250 req'ir'd)	19	11
Georgia ..	Use Y. M. C. A.	.....	No ...	.....	.....	.....	.....	117 ...	10	6
Iowa ....	"	40 .....	No ...	.....	\$5	.....	1	100 ...	15	4
Kansas ..	A Hall ..	100 .....	Partly	.....	.....	.....	2	600 ...	21	8
Minnesota .....	Yes .....	.....	Partly	1 Year or no Diplo.	\$0.50	\$4.60	3	800 ...	15	8
Missouri.	Yes .....	60 .....	No ...	4 hours ..	.....	\$3.50	3	409 ...	10	Part of Ath. Work
Nebraska	Yes .....	.....	No ...	No .....	.....	.....	3	200 ...	16	6
North-western	Yes .....	50 .....	No ...	1 hour ...	.....	.....	3	200 ...	16	7
Illinois ..	Yes .....	.....	Partly	2½ hours.	.....	\$3	1	400 ...	15	6
Louisiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Univer. Pennsylv.	Yes .....	130 .....	Partly	.....	.....	.....	2	130 ...	18	6
Stanford.	Yes .....	130 .....	No ...	1 to 2 hrs.	\$1	.....	5	370 ...	27	10
Syracuse	.....	.....	.....	.....	.....	\$2 to \$3	.....	400 ...	23	6
Univer. Texas ...	Yes .....	100 .....	Yes ..	None ....	.....	\$3	.....	360 ...	15	5
	Yes .....	50 .....	Partly	None ....	\$0.50	\$4.50	2	360 ...	15	5
						\$1.50 to \$2	1	200 ...	6	5
Vermont.	Yes .....	100 .....	Partly	Yes .....	.....	.....	1	200 ...	6	5
W. Pennsylv.	Yes .....	40 .....	Partly	No .....	.....	.....	1	50 ...	16	6
W. Virginia ..	Yes .....	.....	No ...	No .....	No Required	.....	1	300 ...	17	4
Wisconsin ....	Yes .....	.....	Partly	2 hrs. w'rk 1 hr. cr.	\$2 to \$3.50	\$2 to \$5	.....	1000(650 req'ir'd)	.....	.....

ANTHROPOMETRY—SPECIAL CASES.

Where.	Bathing Facilities.	System.	Use Camera?	Any Special Cases?	App. for Special Work.	Physician.	Special Prob. being Investigated.	Military Drill.
California....	58 Showers.....	A.A.A. P.C.	Yes..	Yes..	Yes..	The Direct'r	Yes..	Com-puls'y
Cincinnati...	3 Showers.....	Seaver .....	No....	.....	Yes..	.....	.....	No
Colorado....	2 Showers.....	None.....	No....	.....	.....	None.....	.....	No
Columbia....	Tank, 50x100. 60 Showers and some other Baths.....	American Ass'n and Original..	No....	Yes..	Yes..	The Direct'r	Yes..	No
Cornell....	Tank, 25 Showers and 1 Needle Bath.	Sargent ....	Yes..	.....	Yes..	Cases are referred to Specialists	.....	Yes
Georgia....	Showers, Tubs and Needle Baths	.....	.....	.....	.....	.....	.....	Com-puls'y
Iowa....	Showers and Tubs	.....	.....	.....	.....	.....	.....	Com-puls'y
Kansas....	Showers.....	Y. M. C. A. Modified..	Yes..	Yes..	Yes..	The Direct'r	Yes..	Part Gym. Work. Com-puls'y
Minnesota....	40 Showers.....	Sev'ral Combined.....	No....	Yes..	Yes..	Dir. and As't are Physi'ns	Yes..	Com-puls'y
Missouri....	8 Showers.....	Not for Men.	.....	.....	.....	.....	.....	"
Nebraska....	Showers.....	.....	.....	.....	.....	.....	.....	"
Northwestern	3 Showers.....	Original....	.....	.....	.....	The Direct'r	.....	No
Illinois....	Tank, Showers, Steam and Tub	.....	.....	.....	.....	.....	Yes..	Com-puls'y
Louisiana....	.....	.....	.....	.....	.....	.....	.....	.....
New York Univ..	Showers .....	Sargent .....	No....	No....	.....	None.....	.....	No
Pennsylvania..	.....	.....	.....	.....	.....	.....	.....	.....
Stanford....	3 Showers.....	Own Modifications ..	Yes..	Yes..	Yes..	.....	.....	Part Gym.
Syracuse....	Tanks, Tubs and Showers .....	Posse.....	Yes..	.....	.....	Yes .....	.....	No
Texas....	8 Showers.....	A.A.A. P.E.	Yes..	Yes..	Yes..	Yes .....	.....	No
Virginia....	4 Showers.....	Sargent ....	No....	.....	.....	.....	.....	Part Gym.
W. Pennsylv.	1 Shower, 8 Bains.....	Seaver .....	No....	Yes..	Yes..	.....	.....	Part Gym.
W. Virginia....	Modern.....	Sargent ....	No....	Yes..	Yes..	Yes .....	Yes..	Com-puls'y
Wisconsin....	Tanks, Tubs and Showers .....	Seaver .....	Yes..	Yes..	Yes..	The Direct'r	Yes..	Part Gym.

## RELATION OF GYMNASIUM TO ATHLETICS—ATHLETICS.

Where.	Under Same Director?	Relation of Gymnasium to Coaches.	No. of Men in Work.	Per cent. Going in Gymnasium after Season.	Physician in Charge?	Relation of Rubbing Rooms to Gymnasium.	Relation of Training Table to Gymnasium.	Cash in Student Treasury.	Director.
California.	No . . . . .	None . . . . .	200 . . . . .	75% . . . . .	Yes . . . . .	Under direction of Student Ath. Ass'n.	Under direction of Student Ath. Ass'n.	\$30,000	Magee, W. E.
Cincinnati.	Yes . . . . .	Director is Coach . . . . .	50 . . . . .	20% . . . . .	No . . . . .	No Relation . . . . .	No Relation . . . . .	1,000	Knoch, A. A.
Colorado.	No . . . . .	None . . . . .	100 . . . . .	"Few" . . . . .	No . . . . .	Student control . . . . .	Student control . . . . .	3,500	Mora, F. C.
Columbia.	No . . . . .	None . . . . .	500 . . . . .	"Most of them" . . . . .	Yes . . . . .	Indep. with [in hands Dir. perm.] of Stud'ts . . . . .	Indep. with [in hands Dir. perm.] of Stud'ts . . . . .	.....	Savage, W. L.
Cornell . . . . .	No . . . . .	None . . . . .	80 . . . . .	20% . . . . .	No . . . . .	.....	.....	.....	Hitchcock, E.
Georgia . . . . .	Director supervises.	Director hires Coaches . . . . .	.....	50% . . . . .	Yes . . . . .	.....	.....	.....	Patterson, A. H.
Iowa . . . . .	No . . . . .	None . . . . .	150 . . . . .	20% . . . . .	Yes . . . . .	No relation . . . . .	No relation . . . . .	.....	.....
Kansas . . . . .	Yes, except Football	Exercises Control when necessary . . . . .	200 . . . . .	75% . . . . .	Yes . . . . .	No relation . . . . .	No relation . . . . .	\$4,500	Naimith, J.
Minnesota.	No . . . . .	None . . . . .	300 . . . . .	70% . . . . .	Yes . . . . .	.....	.....	40,000	Cooke, L. J.
Missouri . . . . .	Director is Head Coach and Business Manager	Director is Head Coach and Business Manager in absolute Control . . . . .	300 . . . . .	80% . . . . .	Yes . . . . .	Under Director's Control . . . . .	Under Director's Control . . . . .	8,000	Dr. Hetherington, C. W.
Nebraska . . . . .	No . . . . .	None . . . . .	75 . . . . .	75% . . . . .	No . . . . .	No relation . . . . .	No relation . . . . .	10,000	Booth, W. C.
Northwestern . . . . .	Yes . . . . .	Director is Head Coach . . . . .	75 . . . . .	50% . . . . .	Yes . . . . .	Director in Charge . . . . .	Director in Charge . . . . .	10,000	Hollister, C. M.
Illinois . . . . .	Yes . . . . .	Director is in Control . . . . .	400 . . . . .	"Very few" . . . . .	No . . . . .	Director in Charge . . . . .	Director in Charge . . . . .	15,000	Huff, G. A.
Louisiana . . . . .	.....	.....	.....	.....	.....	Control by Director through his relations with treasury . . . . .	Control by Director through his relations with treasury . . . . .	.....	.....
New York . . . . .	.....	Absolute Control of all Student Expenses . . . . .	.....	60% . . . . .	Yes . . . . .	.....	.....	.....	.....
Univer. . . . .	Yes . . . . .	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania . . . . .	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stanford . . . . .	No . . . . .	None . . . . .	125 . . . . .	60% . . . . .	For Gym. Men . . . . .	No relation . . . . .	No relation . . . . .	\$20,000	Storey, T. A.
Syracuse . . . . .	Yes . . . . .	Subject to Director . . . . .	200 . . . . .	75% . . . . .	Yes . . . . .	Under Control of Director . . . . .	Under Control of Director . . . . .	.....	Scott, J. R.
Texas . . . . .	Director coaches voluntarily . . . . .	Director coaches voluntarily . . . . .	125 . . . . .	20% . . . . .	No . . . . .	Under Director . . . . .	Under Director . . . . .	\$4,000	Curtiss, F. Homer.
Vermont . . . . .	.....	Partial Control . . . . .	.....	.....	.....	.....	.....	4,000	Cloudman, H. H.
W. Penn. . . . .	.....	Partial Control . . . . .	.....	65% . . . . .	Yes . . . . .	.....	.....	.....	Printz, B. G.
W. Va. . . . .	Yes . . . . .	Partial Control . . . . .	75 . . . . .	25% . . . . .	.....	No relation . . . . .	No relation . . . . .	\$2,500	Sulter, C. E.
Wisconsin. . . . .	No . . . . .	None . . . . .	200 . . . . .	50% . . . . .	Yes . . . . .	.....	.....	25,000	Elson, J. C.

VARIETIES OF APPARATUS IN USE.

Horizontal Bar, Vaulting Bar, Parallel Bars (high), Parallel Bars (low), Parallel Bars (overhead), Vertical Bars, Swinging Bar.

Slanting Ladder, Horizontal Ladder.

Horse, Long Horse, Swedish Horse, Swedish Bom and Saddles, Buck.

Tumbling Mats.

Spring Board, Batteau Board.

Flying Rings, Travelling Rings, Trapeze.

Kicking Disc, Punching Bags, Peg Pole, Vertical Pegs, Rowing Machines, Chest Weights, etc.

Dumb-bells, Wands, Bell Bars, Indian Clubs.

VARIETIES OF GAMES PLAYED.

As part of the regular Gymnasium program and *not* as a part of Intercollegiate athletics.

Base-ball, Association Foot-ball, Punting, Basket-ball. Hand-ball, Indoor Base-ball, Medicine-ball, Hockey, Golf, Tennis, Track and Field Sports, Cross-country Running, Cross-country Walks, Swimming, Fire Drill, Boxing, Wrestling, Fencing, Rowing, Military Drill.

## REPORTS FROM SOCIETIES.

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The Boston Physical Education Society Report for five months, May 23d, 1903:

Since the first of the year, the society has held five meetings, besides those of the sections, and received forty-three new members.

The average attendance, excluding a business session, and notwithstanding almost uniformly stormy nights, has been sixty-seven.

At the January meeting, the section of Normal Schools and Gymnasias being in charge, a paper was read by Mr. Robert Woods of the South End House on "Physical Training and Municipal and Philanthropic Institutions."

The February meeting was devoted to the consideration of the proposed adoption of a new constitution.

In March, the "Abuse of Athletics for Girls and Boys in Secondary Schools," was considered by Miss Lucile Eaton Hill, of Wellesley College; Prof. I. N. Hollis, of Harvard; W. T. Talbot and others. A committee of investigation of the alleged evil was appointed, consisting of Miss Hill, Dr. C. C. Stroud and Miss Elizabeth A. Wright.

At the April meeting, the president, Dr. Meylan, gave a report of the National Convention in Detroit. This was followed by a paper by Dr. John Bapst Blake, on "Cross Country and Road Walking."

The Medical Gymnastic section in charge of the May meeting presented Dr. N. Emmons Paine, who described the movements and baths used in the "Schott Method in the Treatment of Heart Disease and Nervous Troubles." The Society tendered a complimentary dinner to the President, Dr. Meylan, on May 19th, which was most enjoyable in every way, and well attended.

(Signed) MARY REES MULLINER, Secretary.

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The first quarterly meeting for 1902 and 1903 of the Pennsylvania District Association of the A. A. A. P. E. was held Saturday, November 15th, at the Guess House of the Rose Valley Association, Moylan Station, Pa. Luncheon was served for thirty-two.

The President, Mr. J. P. Ryder, presided. Mr. William H. Price, president of the Rose Valley Association, addressed the Society on "Development," and explained the objects of the Association. An inspection of hand made furniture followed.

(Signed) EVALINE YOUNG, Secretary.

The Pennsylvania District Association of the A. A. A. P. E. held its regular meeting at Dresels Institute, Saturday, January 24th. The president, Mr. J. P. Ryder, presided, and there were sixty-five present.

Dr. Theodore Hough, of the Massachusetts Institute of Technology, addressed the meeting on "Correlation of Physical Training with Instruction in Personal Hygiene." Tea was served in the Gymnasium.

(Signed) EVALINE YOUNG, Secretary.

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The regular meeting of the Pennsylvania District Association of the A. A. A. P. E. was held, Saturday, March 21st, in the Gymnasium, Bryn Maur College. Mr. H. P. Ryder presided, and there were fifty-two members and friends present.

Five delegates were appointed to attend the Detroit Convention, Dr. James A. Babbitt, Dr. C. E. Ehinger, Dr. H. B. Boice, Evaline Young and Adele Adams.

Dr. Herman Arnold, of the New Haven Normal School of Gymnastics, addressed the Society on "Effect of Exercise on Digestion." Tea was served and an enjoyable social meeting followed the lecture.

The following new members have been elected in the Pennsylvania Association: M. A. D. Browne, Phila.; Miss Laura M. S. Howard, Phila.; Miss Mary Miller Jones, Phila.; Miss Isabel Small, Phila.; Dr. H. Shindle, Phila.; Dr. James K. Young, Phila.; Miss Mary W. Ballard, Phila.; Dr. Edward Allen, Overbrook, Pa.; Miss Sara Hamilton, Chester, Pa.; Dr. Chas. G. Lang, Trenton, N. J.; M. F. Sweeney, Pottstown, Pa.; Miss Margaret Wagner, Wilson College, Chambersburg, Pa.; Miss Mary H. Weir, Haddonfield, N. J.; Miss Mary A. Wollarton, Swarthmore, Pa.; Miss Anna B. Lilly, Lansdonne, Pa.

(Signed) EVALINE YOUNG, Secretary.

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#### CINCINNATI PHYSICAL EDUCATION SOCIETY.

The Cincinnati Physical Education Society met Friday evening, April 17th, in the rooms of the "Teachers' Club." All members were present. After the transaction of business, Dr. Ziegler, who had attended the Convention in Detroit, gave the members a very graphic and interesting account of the meetings, speaking in terms of the highest commendation of some of the events, and that in all it was a very profitable and enjoyable meeting.

The discussion occasioned by the "Paper on Health, Strength

and Longevity from Eating," read by Mr. Guido Werner, at the previous meeting, was resumed and evidenced considerable interest among the members.

(Signed) ADELAIDE SPILLS, Secretary.

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NEW HAVEN PHYSICAL EDUCATION SOCIETY.

On the evening of March 16, 1903, a meeting of the New Haven Physical Education Society was held at the Yale Medical School and addressed by Dr. H. B. Ferris, Professor of Anatomy in Yale University.

The lecture, which was upon "Histology," was illustrated by Dr. White's projection apparatus by means of which were shown, not pictures of slides prepared for microscopic use, but the slides themselves magnified one hundred times.

After a vote of thanks had been given Dr. Ferris for his interesting and instructive address a short business meeting was held, at which the following persons were elected members: Miss Ethel Weeden, Miss Frances Barron, Miss Madeleine Smith, Miss Anna Cressman, Miss Florence Foote, Miss Florence Snow, Miss Mildred Sturdevant, Miss Elizabeth Peterson, Miss Margaret Remington, Miss Julia Bishop, and Miss Florence Towle.

As a delegate to represent the New Haven Physical Education Society at the National Convention of the A. A. A. P. E. to be held in Detroit in April, Dr. E. H. Arnold was chosen, after which the meeting adjourned.

(Signed) CAROLINE M. WOLLASTON, Secretary.

## REPORTS FROM SECTIONS.

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### THE SOCIETY OF SECONDARY SCHOOL PHYSICAL DIRECTORS.

PROCEEDINGS OF THE FIRST ANNUAL MEETING HELD IN THE NEW YORK ATHLETIC CLUB BUILDING, DECEMBER 30 AND 31, 1902.

*Tuesday, December 30. Morning session.*—A meeting of the executive committee was called to order at 10.30 by the president, Mr. E. B. DeGroot, of Lewis Institute, Chicago, Ill. The following members of the committee were present: Mr. DeGroot, the president; Mr. Lory Prentiss, 1st vice-president, Lawrenceville School, Lawrenceville, N. J.; Mr. M. F. Sweeney, 2nd vice-president, The Hill School, Pottstown, Pa.; Mr. H. S. Anderson, treasurer, University School, Cleveland, Ohio; Dr. P. S. Page, Andover Academy, Andover, Mass.; Mr. O. F. Monahan, secretary, The Hotchkiss School, Lakeville, Conn.

The program of the two days' session was arranged, and an invitation to the society from The Society of College Gymnasium Directors to attend the afternoon session of their meeting was accepted.

*Afternoon session.*—The regular meeting was called to order at 3.30 by the president. The secretary made a short address, giving the history of the society. He also reported the business that was transacted when the society was organized during the summer of 1902 at Chautauqua, N. Y.

His report was accepted.

On motion of Mr. Prentiss, it was voted that the secretary should procure an authentic list of the charter members who were present at Chatauqua.

The president then delivered his annual address.

The treasurer submitted his report, which was accepted.

Inasmuch as Dr. W. G. Anderson, of Yale, was the promotor of the society, and was responsible more than anyone else for its organization, he was unanimously elected an honorary member.

A short recess was taken to receive applications for membership, and the executive committee elected the following men who, with the officers, comprise the complete list of members: Dr. J. Martin Voorhes, Pratt Institute, Brooklyn, N. Y.; Mr. C. W. Mayser, Newark Academy, Newark, N. J.; Mr. Isaac Porter, Penn Charter School, Philadelphia, Pa.; Mr. Chas. E. Hammett,



The Jacob Tome Institute, Port Deposit, Md.; Dr. H. S. Pettit, Adelphi Academy, Brooklyn, N. Y.; Mr. H. A. Ross, Phillips Exeter Academy, Exeter, N. H. All except Mr. Ross and Mr. Hammett were present at the meeting. A number of applications were received from men teaching physical training in secondary schools; but as the constitution limits the membership to heads of the department, who must be members of the A. A. A. P. E. in good standing and who must have had at least two years' professional experience in physical training, they could not be accepted.

Dr. Anderson made an address in which he pointed out some of the things that the society should work and stand for.

On motion of Dr. Page, the president appointed a nominating committee consisting of Mr. Porter, Mr. Mayser, and Dr. Page to propose names of officers for the coming year.

The meeting adjourned at 6 P. M. to meet the next day.

*Wednesday, December 31. Morning session.*—The meeting was called to order by the president at 9.30 A. M.

The nominating committee reported and recommended the re-election of the old officers. They were elected unanimously.

Mr. Mayser, chairman of the committee on nomenclature, submitted the committee's report, which recommended the adoption of the same system as that used by the college gymnasium directors. On motion of Mr. Prentiss, seconded by Mr. Porter, the society adopted this system for at least one year.

Dr. Anderson, chairman of the nomenclature committee of College Directors' Society, spoke on the subject of nomenclature.

There was a general discussion of the methods used by the different members in conducting the physical training departments at the leading secondary schools, and a program of the work was laid out for the coming season.

It was voted that the secretary should make application for affiliation with the A. A. A. P. E. It was also voted that the secretary send a brief account of the meeting, together with the president's address, to the secretary of the A. A. A. P. E.

Members of the society will be assigned lines of research during the year so that a complete program covering all phases of physical training work in secondary schools will be offered for the next annual meeting.

A motion was made and carried that the secretary's expenses be paid by the society.

A vote of thanks was tendered the Y. M. C. A. for the generous use of the club house, restaurant, etc.

The meeting adjourned at 1 P. M.

O. F. MONAHAN, Secretary.

## REPORTS FROM THE COUNCIL.

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March 28, 1903—Present: Dr. Savage, Dr. Taylor, Dr. Gulick, Miss Bancroft, Miss Beiderhase and Mr. Hillyer.

The minutes of the previous meeting were read and approved.

The following were elected to membership: Elizabeth Burton, Chicago; J. Y. Cameron, Buffalo; Blanche A. Cornwell, Brooklyn, N. Y.; Isabel Dix Fisher, Rochester, N. Y.; Bertha Fuhrer, Pittsburgh, Pa.; Edna Fuller, Fredonia, N. Y.; Margaret Gowans, Buffalo, N. Y.; Sally P. Harris, Janesville, Wis.; Mrs. A. E. Hedstrom, Buffalo, N. Y.; Bessie Willis Howard, Cambridge, Mass.; Edna Mae Hoxsie, Ann Arbor, Mich.; J. E. Huchting, St. Louis, Mo.; Leila O. Hume, Buffalo, N. Y.; A. F. Kennedy, M.D., St. Louis, Mo.; Nathalie K. Mankell, Buffalo, N. Y.; Richard Meller, Buffalo, N. Y.; Julia Anna Murphy, Charlestown, Mass.; Jennie F. Phillips, Ann Arbor, Mich.; Miss Lura Phillips, Cedar Falls, Iowa; Margaret C. Remington, New Haven, Conn.; M.M. Ringler, Portland, Oregon; Edith Simonson, West New Brighton, S. I., New York; Mrs. S. Marcea Skillman, Ypsilanti, Mich.; Isabel Smart, Philadelphia, Pa.; Annie M. Somerville, Buffalo, N. Y.; David G. Stenberg, Buffalo, N. Y.; Blanche L. Strickland, Detroit, Mich.; DeForest Willard, M.D., Philadelphia, Pa.; B. Van Lew Wilson, Lynn, Mass.; Harriet L. Booth, Brooklyn, N. Y.; Elizabeth Fox, Big Stone Gap, Virginia; Miss Rush Roberts, Brooklyn, N. Y.; Dorothy Watters, New York City; Eliza P. Clark, Buffalo, N. Y.; Margaret Cooke, New York City; Helen Harmon Cowles, New York City; Eleanor M. Reed, Buffalo, N. Y.; May Simpson, New York City; Mary Lorette Smith, Buffalo, N. Y.; Roswell Park, M.D., Buffalo, N. Y.; James W. Putnam, M.D., Buffalo, N. Y.; Abby G. Wheeler, Minneapolis, Minn.; Mary F. Kingsley, E. Stroudsburg, Pa.

Resignations were accepted from Edward Bettie, Jr., Katharine J. Kincade, Ellen F. Mason, and Caroline W. Smedley.

The following members were dropped from the rolls according to the Constitution, for two years arrears of dues: Vaula Carter, W. L. Childs, Mary G. Churchill, John D. Clarke, M.D.; Harry S. Cornish, Elizabeth A. Davis, Prof. Marcellus R. Ely, Hanna Esney, Mrs. Louis Feld, Mary S. Haagenon, Francis J. Hayward, Mrs. Burton J. Hendrick, Amy R. Hill, Miss Jean Kendrick, Alice E. Leggett, W. F. Lyon, Adelaide R. McNamara, Mrs. Ella A. McPherson, Florence H. Marston, Julia R. Marvin, Mrs. Helen P. Neal, Mary J. O'Conner, Florence Offutt, Jean Pennycook, Jennie M. Rew, Lucy W. Robinson, Helen M. S. Sanborn, Bessie Tower, Margaret S. Wardell, Lucy E. Wright.

The Secretary's report, including correspondence, was received and accepted. This included an application for affiliation with the A. A. A. P. E. from the Society of Secondary School Physical Directors.

Mr. Hillyer moved that this Society be admitted as a Section of the A. A. A. P. E. Passed.

An application was received for affiliation with the A. A. A. P. E. from the St. Louis (Mo.) Physical Education Society.

Dr. Taylor moved that the St. Louis Society be admitted under the rules and regulations. Passed.

The Treasurer's report, showing \$194.77 on hand, was received.

The Editor of the REVIEW reported the magazine as up to date with its issues.

The Committee on Extension made a report of progress.

The Transportation Committee made a report of progress.

The Council adjourned.

(Signed) JESSIE H. BANCROFT, Secretary.

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March 7, 1903—Present: Dr. Savage, Dr. Gulick, Mr. Hillyer, Mr. Haug, Miss Beiderhase, Miss Bancroft, Mr. Hepbrun, and by invitation, Dr. Mary Rees Mulliner, of Boston, and Miss Evaline Young, of Philadelphia, members of the Committee on Constitution.

The minutes of the previous meeting were read and approved.

The following were elected to membership: Carrie Van R. Ashcraft, St. Louis, Mo.; Ruth Stewart Arnold, New Britain, Conn.; H. Bissell, West Medford, Mass.; Ernest E. Bliss, Cleveland, Ohio; Elmer Berry, Springfield, Mass.; Madeline Brown, New York City; Caroline A. Baxter, Utica, N. Y.; Dr. G. V. Buchler, Boston, Mass.; Chares A. Burden, Eugene, Ore.; Grace Gordon Babson, Rochester, N. Y.; F. Burger, M.D., Kansas City, Mo.; William B. Baer, M.D., Baltimore, Md.; A. D. Browne, Germantown, Pa.; Frances M. Baron, New Haven, Conn.; Philo F. Chase, Berwyn, Ill.; Annie S. Cressman, New Haven, Conn.; E. R. Cooke, M.D., Minneapolis, Minn.; Sarah C. Crosby, Florence, Mass.; Bertha L. Colburn, New York City; Eugene A. Case, Pittsburgh, Pa.; Anna D. Cooper, Harrodsburg, Ky.; Ethel B. Chase, Ann Arbor, Mich.; Martin A. Delaney, St. Louis, Mo.; Diantha L. Dewey, Oberlin, Ohio; Grace Douglass, Cambridge, Mass.; Margaret Dunning, New York City; Esther May Engle, Philadelphia, Pa.; Florence B. Foote, New Haven, Conn.; Mabel Freeman, New Haven, Conn.; Mary A. Foley, Baltimore, Md.; Joseph Sherman Ford, Exeter, N. H.; May Goodall, Boston, Mass.; Archer L. Grover, Orono, Maine; John W. Hopkins,

Battle Creek, Mich.; Norma Louise Hanly, Brooklyn, N. Y.; Ruth A. Harper, New York City; Mary Langdon Hard, New Haven, Conn.; Sara E. Hamilton, Chester, Pa.; F. A. Henckel, Springfield, Mass.; Lavinia Hutt, Boston, Mass.; Mrs. Rose Edson Helme, Adrian, Mich.; A. R. Hackett, Detroit, Mich.; Mr. Fitz John, Johnstown, Pa.; William Jessop, Summit, N. J.; Mary A. Johnson, Boston, Mass.; Mary E. Jones, St. Louis, Mo.; Celia Kryske, New York City; Eva J. Kress, New Haven, Conn.; Mary Kennish, New York City; Rachel J. Kennedy, Cleveland, O.; Eber T. Kanaga, Philadelphia, Pa.; Elizabeth Kennard, Philadelphia.; Valborg Kastman, Iowa City, Iowa; Carrie M. Lamb, Yankton, Dak.; Gertrude A. LeCompte, New York City; Gail Lowry, Oberlin, Ohio; Irving W. Larimore, Denver, Colo.; Maud March, New York City; J. Leonard Mason, Lawrenceville, N. J.; Donald V. Mitchell, Grinnel, Iowa.; James M. MacLeod, Toronto, Canada; Fanny B. Mairs, Cleveland, Ohio; Helen Kate North, Stanford University, Calif.; Charlotte L. Norton, Cleveland, Ohio; Miss E. Lowry Nunn, Baltimore, Md.; Winifred L. Osborne, Berkeley, Calif.; M. Anna Overton, Bay Shore, N. Y.; Andrew M. O'Dea, Madison, Wis.; George F. Poole, M.D., New York City; Beatrice T. Peterson, Brooklyn, N. Y.; Martha L. Rogers, E. Morristown, N. J.; James W. Rhodes, Berkeley, Calif.; Julia Rowland, Baltimore, Md.; V. V. Rosebore, Springfield, Mass.; Robert Reach, Philadelphia, Pa.; Louisa K. Ruggles, Poland Spring, Maine; Mary L. Robinson, Oberlin, O.; Margaret Stansfeld, Bedford, England; S. E. Swanbeck, A. M., Cleveland, Ohio; R. Beardsley Stahl, New Haven Conn.; Madeleine S. Smith, New Haven, Conn.; Mildred Parker Sturdevant, New Haven, Conn.; Florence E. Snow, New Haven, Conn.; Harriett B. Sake, Detroit, Mich.; Henry A. Staberg, Brooklyn, N. Y.; Hugo B. Seikel, Providence, R. I.; Alice M. Stearns, New York City; A. Steigerwald, Brooklyn, N. Y.; Charles B. Stever, New York City; Edward H. Shenkel, Rutland, Vt.; Edith L. Tompkins, New York City; C. F. Tambling, Mt. Pleasant, Mich.; Harriet W. Thomson, Ann Arbor, Mich.; Ethel J. Treadwell, Lynn, Mass.; Gorden B. Trowbridge, Boston, Mass.; G. F. Thompson, Springfield, Mass.; Emil A. Trautmann, Paterson, N. J.; Floyd W. Tuttle, A. B., Columbia, Mo.; Jennie M. Whitney New Haven, Conn.; Lillian A. Wright, New Haven, Conn.; J. H. Werner, Naperville, Ill.; James K. Young, M.D., Philadelphia, Pa.

Resignations were accepted from Miss Florence L. Carter, and Miss Grace S. Poley.

The Secretary's report was received.

The Treasurer reported cash on hand amounting to \$445.68, and bills receivable for advertisements amounting to \$134. Received and accepted.

The Editor of the REVIEW made a report of progress, which was accepted.

The Transportation Committee reported progress.

Dr. Gulick moved, That the Secretary be instructed to publish the proposed new Constitution when it shall be reported by the Committee on Constitution, and the final programme of the April Convention, both in leaflet form. Passed.

Dr. Gulick moved, That the expenses of the Secretary in attending the National Convention be paid by the National Association. Passed.

Dr. Gulick moved, That pending the acceptance by the Convention of a new Constitution, the voting power of delegates to the Convention be the same as at the last Convention, viz.:

(1) Individual members, not represented by a delegate, are entitled to vote upon all question before the Convention; and

(2) Societies may send one delegate for each ten members, said delegate to have the power of casting ten votes and no more. Passed.

Upon motion the Council adjourned.

(Signed) JESSIE H. BANCROFT, Secretary.

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February 14, 1903—Present: Dr. Savage, Dr. Taylor, Dr. Gulick, Miss MacMartin and Miss Bancroft. Dr. D. A. Sargent was present by invitation.

The minutes of the previous meeting were read and approved.

The following persons were elected to membership: Mary Wood Ballard, Philadelphia, Pa.; Maud H. Blaurock, East Orange, N. J.; Otto H. Boettger, St. Louis, Mo.; Nancy Brownell, Newport, R. I.; Mary Devennie, Cambridge, Mass.; D. M. Doran, Jacksonville, Ill.; Henry Etling, Pittsburgh, Pa.; Melvin M. Ford, Rochester, N. Y.; M. I. Foss, Brooklyn, N. Y.; Mrs. Maria L. Grant, New York City; Miss B. L. Griffin, Brooklyn, N. Y.; Lena Hoernig, Kansas City, Mo.; Laura M. S. Howard, Philadelphia, Pa.; Marie Ruef Hofer, New York City; Anna Lilly Lansdowne, Pa.; Gertrude E. Moulton, Oberlin, O.; Otto C. Mauthe, Dayton, O.; Maude A. Monroe, Oberlin, O.; George C. Moore, M.D., Groton, Mass.; Eleanor Parry, M.D., South Hadley, Mass.; John H. Scott, Springfield, Mass.; Ella L. Sweeney, Providence, R. I.; Dorothea Schroeder, New York City; George W. Schoening, N. Y. City; E. von den Steinen, Chapel Hill, N. C.; Clara A. Tilton, Buffalo, N. Y.

The Secretary's report was received, and included a communication from the Chairman of a meeting of members of the A. A.

A. P. E. held in Boston on February 5th, enclosing a resolution protesting against the adoption of a constitution without first submitting it to a convention of the Association.

Dr. Henry Ling Taylor, Chairman of the Committee on Constitution, moved, "That the Council rescind its action providing for the adoption of a new Constitution on March 1, 1903, unless by that time a majority of the members of the Association should vote in the negative." Passed.

Dr. Taylor moved, "That local societies be requested to appoint each one member of a committee to formulate a Constitution that shall be presented to the next Convention at its first meeting." Passed.

Dr. Taylor moved, "That the President be requested to express to Dr. Sargent the thanks of the Council for his presence at this meeting, and his assistance in arranging to meet the difficult situation regarding the constitution." Passed.

The Council adjourned.

(Signed) JESSIE H. BANCROFT, Secretary.

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## EDITORIAL NOTES.

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Owing to the fact that the new Council will not be ready to take up its work in time to issue the June Number of the Magazine, and in view of the further fact that the proceedings of the Detroit Convention are not yet ready for publication, the Editor has decided to publish the June matter already in hand. In this way, the delay due to the reorganization may be largely obviated.

**NEWS NOTES.**

The National Education Association reports two departments of interest to teachers of physical training. Some of the papers to be presented in the Child Study Department, and a complete program of the Physical Training Department are as follows:

**TUESDAY MORNING, JULY 7TH.**

*Topic*—Child Study in Relation to Elementary Education:

1. A Study Based on the Children of a State—Earl Barnes, staff lecturer of the American Society for Extension of University Teaching, Phila., Pa.

Discussion—Miss Lillie A. Williams, State Normal School, Trenton, N. J.

2. The Teacher's Practical Application of the Results of Child Study—F. E. Spaulding, Supt. of Schools, Passaic, N. J.

Discussion—George E. Johnson, University School, Cleveland, O.; Ida C. Bender, M.D., Supervisor of Primary Grades, Buffalo, N. Y.

3. The Health and Growth of School Children—Dr. W. W. Hastings, International Y. M. C. A. Training School, Springfield, Mass.

4. School Hygiene in its Bearing on Child Life—Thos. D. Wood, M.D., Teachers' College, Columbia University, N. Y.

Discussion—Medical Inspection of Schools.

5. Psychic Arrest in Adolescence—G. Stanley Hall, Pres. of Clark University, Worcester, Mass.

Discussion.

**DEPARTMENT OF PHYSICAL TRAINING.****SESSION IN.**

W. O. KROHN, Chicago, Ill., *President*.

BARONESS ROSE POSSE, Boston, Mass., *First Vice-President*.

Miss MABEL L. PRAY, Toledo, Ohio, *Second Vice-President*.

Miss ALTA WIGGINS, Buffalo, N. Y., *Secretary*.

**WEDNESDAY MORNING, JULY 8TH.**

1. President's Address—Physical Education and Brain Building, William O. Krohn, Chicago, Ill.

2. Physical Sanity and Outdoor Life—Frederick Manley, Boston, Mass.

3. The Place of Physical Education in the Curriculum: Should It be Fundamental or Incidental? E. W. Lyttle, Inspector, University of the State of New York, Albany, N. Y.

FRIDAY MORNING, JULY 10TH.

1. Physical Training for the Mass of Students—Dr. William G. Anderson, Yale University, New Haven, Ct.; F. N. Whittier, Bowdoin College, Brunswick, Me.

Discussion—John R. Kirk, President of the State Normal School, Kirksville, Mo.

2. Recreative Physical Exercise—Ernest Hermann, Supt. of the Thomas G. Plant Company's Gymnasium for its Employees, Boston, Mass.

3. Tests of Efficiency in Normal School Gymnastics—Baroness Rose Posse, Boston, Mass.

A visit is planned to the Hemenway Gymnasium, Cambridge, Mass.



**ABSTRACTS.**

*"Accidents from College Football."* By Edwin G. Dexter, of University of Illinois, in *Educational Review* for April.—In view of the fact that during the football season many reports of serious accidents occurring to those playing the game are constantly being reported in the daily papers, and are the means of prejudicing many persons against the football, Mr. Dexter has thought it worth while to institute inquiries which should at least help to show the real state of the case. To this end he sent the following questions to the prominent colleges and universities, receiving more or less satisfactory answers from fifty-eight of them. The questions included: The number of students enrolled during manently injured; the number seriously injured, etc., who were forced to lose time from college work; was there competent medical or other supervision of training; and also opinion as to value of game. From the answers received the general conclusions drawn are: 1st, about one college man in ten the country over plays football; 2d, about twice as large a proportion of the men in small colleges plays the game as in the large; 3d, the proportion of men playing seems to be slightly decreasing; 4th, about one player in thirty-five is sufficiently injured each season to necessitate loss of time from college. The number of football players who are permanently injured or die from the effects of the game is so small as to be practically a negligible quantity; 6th, college football is adequately superintended in nearly all the institutions; 7th, the opinions of college officers regarding the value of the game are roughly 17 to 1 in favor (weighed in terms of enrollment); 8th, the newspaper reports of injuries to college football players seem to be grossly exaggerated; not so much so in case of players upon other teams; 9th, accident insurance statistics would lead us to believe that many other forms of sport are more dangerous than football. The replies as to the value of the game are interesting. These replies came from either the president, some member of the faculty or in a few cases from athletic committees, not in any cases from those directly interested in the training of teams. Of the fifty-eight answers received, thirty-nine indicated approval of the game as now played; fifteen, a modified approval, while four expressed adverse criticism. Considering the enrollment of the various institutions represented in these opinions, those in favor were as seventeen to one.

*"Grace in Woman's Costume"* (Hjalmar Hjorth Boyesen 2d, *Cosmopolitan* for April).—While some of the fundamental principles which should govern a woman in the choice and make-up of clothing are here set down and advocated, the illustrations

which accompany the article fail to convince one that Mr. Boyesen has any keen appreciation of the really graceful and appropriate in woman's dress, they being for the most part reproductions of up-to-date gowns which while fashionable could scarcely lay claim to being graceful.

*"An Hour's Work Done by School Children"* (Giuseppe Bellei, of Bologna, Italy, *Educational Review* for April).—An account of experiments which were undertaken for the purpose of ascertaining any difference which might exist in the amount and quality of work done in the morning and afternoon of the same day and between that done at the beginning and at the end of the school year. Mr. Bellei after describing the method used and giving the results of the various experiments draws the following deduction: 1st, the quantity of work produced during each one quarter of an hour presents no rule. 2d, the quality of the work gets worse from the first to the last quarter of an hour. 3d, the quantity of work done by the scholars during one hour in the afternoon is less and worse than that done in the morning. 4th, the work done in one hour in the morning and in the afternoon in the last days of the scholastic year was almost always more, but always worse than that done in the same period of time in the first month of teaching.

*"School Hygiene in the Training School"* (Caroline T. Havens, Ethical Culture School, New York City, *Kindergarten Review* for March).—Miss Havens comments on the noticeable lack of instructions in Hygiene for teachers of all grades and urges the giving of a thorough and practical course in that subject, particularly to Kindergarten and Primary teachers. The outline of a course in School Hygiene as given at the Ethical Culture School should prove suggestive to other Training Schools, for while the time given to it is comparatively short, the course is comprehensive, and is undoubtedly of great value. The main divisions of the subject as given are: The school building and equipment: The pupil and teacher: School organization and administration. Under these headings is given in detail the topics which are taken up and list of important references is appended.

*"The Education of the Feeble-minded"* (James B. Richards, *Kindergarten Review* for April).—An address given before the Conference of Charities and Correction, Washington.

The reprinting of this article while containing nothing especially new is of value as showing to those interested in defective children what has been done in cases which were as near hopeless as one could imagine any cases to be. The chief lesson to be learned is that of infinite patience with a receptive mind, if any good is to be done to the child.

"*Professor Earl Barnes on the Training of the Dull Child*" (Dr. Jennings B. Merrill, *Kindergarten Review* for April: An address given at Normal College, New York City).—Prof. Barnes referred to the great number of defectives in this country, some 180,000 who needed special attention and the great and good work to be done amongst this class. The work of Dr. Edward Segaims in this country and Dr. Francis Warner in England, was noticed in particular and the need for the putting of Dr. Segaims's writing in proper and accessible form was urged.

"*Health Made and Preserved by Daily Exercise*" (Bernard MacFadden, *Cosmopolitan* for April).—A popular and readable article which contains a good many common-sense suggestions as to everyday life and what may be done to preserve and improve health and strength. The illustrations show exceedingly athletic young men taking various exercises which would doubtless prove beneficial to the majority to whom this article would appeal, also young women taking a number, which, while they might be of value after some preliminary work, might very easily be harmful to the woman unaccustomed to exercise.

"*Rhythm*" (*Kindergarten Review* for February).—This study by a normal student from the Louisville, Ky., Training School for Kindergartens, contains many useful suggestions as to ways in which young children, particularly those whose rhythmic sense is defective or undeveloped, can be aided in gaining a keen sense of rhythm and should prove helpful to those who are teaching children of all ages.

"*Lesions of the Tibial Tubercle Occurring During Adolescence*" (Robert B. Osgood, M.D., Boston, Mass., *Boston Medical and Surgical Journal*, January 29th.)—Dr. Osgood draws attention to the fact that fractures of the Tibial Tubercles are exceedingly rare, but he is of the opinion that lesions are comparatively frequent but seldom recognized. While such a lesion is not calculated to incapacitate a person for any length of time, it often proves stubborn, causes inconvenience and prevents vigorous exercise for many months. Owing to the increased facilities for investigating such conditions, Dr. Osgood believes that such cases should be carefully diagnosed with the help of the X-ray and that where that is done and the proper treatment follows, little inconvenience and no permanent difficulty should attend the injury. Lesions of Tubercle are apt to occur during adolescence owing to the condition of the cartilage and bone at that stage. The symptoms following this injury and treatment indicated are given in detail together with numerous diagrams and photographs of this condition.

*"Observations upon Long-Distance Runners"* (Edited by J. B. Blake, M.D., and R. C. Larrabee, M.D., *Boston Medical and Surgical Journal*, February 19th.)—For the past three years, the so-called Marathon race, has been run in the vicinity of Boston and the men who have taken part each year have been thoroughly examined and tested before and after the event in order that the effect of such a long distance run (the course of twenty-four miles) upon the participants might be accurately determined. The details and the results of these examinations which included tests of heart, blood, height and wind, are fully set forth in this article. The practical bearing of these tests would seem to be the possibility of training young men for this kind of work when necessary in time of war. So far as observed, no permanent injury of any kind has resulted from any of the participants in these races. The feature which caused greatest discomfort being the blisters upon the feet.

*"Athletics in High Schools: Their Value and their Control"* (A. W. Skinner, Oneida, N. Y., *American Education Review* for April).—Mr. Skinner is a thorough believer in the value of athletics in High Schools. In the country districts he believes they are not needed as a means of physical development, but "as a means of maintaining and enforcing discipline in our schools; as a means of cultivating in our students an esprit du corps, and as a factor in the training of our youth," he thinks their value is great. In order, however, that the best results may be accomplished there should be faculty control on both play and finances.

*"Games of American Indians"* (Stewart Culin, *Outing* for May.)—An exceedingly interesting account of Indian and other race games showing the origin of many of, or indeed most of, our games of chance and skill, with descriptions of the various ways in which the same games are played among the different tribes. We are told that "Shinny," with the Indians is essentially a woman's game, so that in taking up Field Hockey, woman is but reasserting her claim to what has always belonged to her.

M. G.

*School Gymnastics in Wurtemberg* (Translated and abridged from the *Monatsschrift für das Turnwesen*).—An Order issued at Stuttgart April 28, 1902, by the Royal Ministry of Church and School Affairs, declares that gymnastics forms an organic part of the public education in classical and modern schools (secondary schools for boys), and is to be treated as a regular school subject in the case of all pupils who have reached the age of nine years. Excuses from attendance upon this branch of instruction are to be granted only upon a physician's certificate or for the most urgent personal reasons. The exercises are to be conducted uninter-

ruptedly throughout the entire school year. The instruction is to occupy at least one hour a week in the first year, and in the following years at least two hours. The sections will regularly correspond with school classes, and forty is considered the largest number compatible with orderly instruction. Wherever possible the gymnastic lessons are to follow immediately after other required exercises. Gymnastics is included among the subjects for public examination and for mention on school certificates. As an essential means of education, gymnastics seeks not only the maintenance and promotion of health and the development of physical strength and skill, but also the moral training of the pupil, control of the body by the mind and the voluntary subordination of the individual to the whole, and in particular the fostering of such manly qualities as endurance, presence of mind, and courage.

The gymnastic material includes: Exercises in the standing position (without and with hand-apparatus, including fencing); exercises in walking, running, jumping and vaulting, throwing, wrestling; exercises in rest and hanging positions; gymnastic games. Every effort should also be made to encourage practice in the latter outside of school hours. In summer, and in winter where suitable accommodations are available, occasional lesson periods may be given up to instruction in swimming, but always in the presence of the teacher of gymnastics, and with care that the regular work does not suffer from the change. Participation in the swimming exercises is optional, and they shall not be given unless at least half the pupils desire it. The same rule applies to skating exercises in winter. Appropriate special orders, to be issued later, will treat of the technical management of gymnastic instruction, the arrangement of material in grades corresponding to age, methodical progress within each grade, and steps for the promotion of gymnastic games.

The training of teachers for the work of gymnastic instruction is the task of the Royal Normal School of Gymnastics at Stuttgart (a separate order of the same date has to do with this institution). It should be the aim to have in every educational institution one or more regular teachers able to undertake instruction in gymnastics as a part of the school duties, either included in the required number of teaching hours, or treated as an extra for which added compensation is allowed. Where such an arrangement is not feasible, other suitable men, and especially teachers in elementary schools, are to be secured for the instruction in gymnastics, at corresponding rates. Teachers devoting the larger part of their time to instruction in gymnastics are considered members of the regular faculty of instruction, with the rights of professional teachers.

The external requirements for orderly gymnastics are an indoor gymnasium, an outdoor gymnasium and playground, gym-

nastic apparatus, and an outfit for games. The following directions apply to the erection of indoor gymnasia and the laying out of grounds. The gymnasium shall contain a light, well-heated and well-aired, closed exercising room at least 25-30 m. long and 12.5-15 m. wide, besides the necessary side-rooms. The floor of the hall throughout its entire width and a length of 21-24 m. is to be of wood; the remaining surface, 4 by 12.5-6 by 15 m. in extent, is to be made soft\* as a landing place in jumping and vaulting. The apparatus for exercises in hanging and rest positions may be movable, i. e., so constructed that when not in use it can be pushed back against the side walls, or it may be fixed. In the latter case care is to be taken that other forms of exercise are not interfered with by the arrangement. Different pieces of the same sort of apparatus are to be placed near each other. The grounds for gymnastics and games shall be at least 60-70 m. long and 30-35 m. wide. To allow for games, fixed apparatus is to be confined to the sides of the plot, and where trees are planted the demands of these games must not be overlooked. The different pieces of apparatus of the same sort are to be grouped together. The soft landing places for jumping are to be put at the ends of the site. So far as possible the indoor and outdoor gymnasia should adjoin each other, and lie in the neighborhood of the school.

The necessary apparatus includes: (a) For gymnastics—iron wands 20-22 mm. in diameter and 85 cm. long for lower and intermediate classes, and 25 mm. in diameter and 85-90 cm. long for higher classes; iron dumb-bells weighing 2 kgm. to the pair for intermediate and 3 kgm. for higher classes; iron shot weighing 1-5 kgm. for lower and intermediate and 6-10 kgm. for higher classes; apparatus for jumping and throwing; rope for pulling contests, and measuring sticks; horizontal ladders, balance beams, bucks; vaulting horses (for higher classes); parallel bars, horizontal bar, climbing apparatus; and, under suitable conditions, fencing apparatus also. (b) For games—bats and balls, the latter of various sizes, weights, and kinds to suit different uses; flags and goal-posts. If additional information is desired in special cases the Director of the State Normal School of Gymnastics in Stuttgart may be consulted.

Where it is feasible, the use of the equipment provided for classical and modern schools is to be granted to other schools also. To guard against accident, every piece of apparatus is to be inspected annually by a competent person, and the results of this inspection are to be included in the annual report on gymnastics.

F. E. L.

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\* A mixture of sawdust, sand, and salt is commonly employed for this purpose in Wurtemberg.—F. E. L.

**BOOK NOTICES AND BIBLIOGRAPHY.**

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CRITIC.

VOL. VIII.

SEPTEMBER, 1908.

No. 3.

# AMERICAN PHYSICAL EDUCATION REVIEW.

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PUBLISHED BY  
THE AMERICAN PHYSICAL EDUCATION ASSOCIATION.

LUTHER GULICK, M.D., EDITOR.

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# American Physical Education Association.

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## THE NATIONAL COUNCIL.

*President and Editor*, LUTHER HALSEY GULICK, M.D., 236 Willoughby Ave., Brooklyn.

*First Vice-President*, WATSON L. SAVAGE, M.D., 308 West 59th St., New York City.

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## AMERICAN PHYSICAL EDUCATION REVIEW,

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# AMERICAN PHYSICAL EDUCATION REVIEW.

Vol. VIII.

SEPTEMBER, 1908.

No. 8.

PROGRAM OF THE  
THIRTEENTH NATIONAL CONVENTION  
OF THE  
AMERICAN ASSOCIATION FOR THE ADVANCEMENT  
OF PHYSICAL EDUCATION.\*

Detroit, Michigan, April 6, 7, 8, 9, 1903.

## CONVENTION COMMITTEE.

*President, Mr. W. P. BOWEN, Ann Arbor.*

*First Vice-President, Dr. ALICE G. SNYDER, Ann Arbor.*

*Second Vice-President, Mr. BERTHOLD SEIFFERT, Detroit*

*Secretary, Mrs. FANNIE CHEEVER BURTON, Ypsilanti.*

*Treasurer, Miss M. PAMELIA CLOUGH, Detroit.*

*Mr. KEENE FITZPATRICK, Ann Arbor.*

*Miss NELLY SUTTON, Detroit.*

## MONDAY, APRIL 6.

8:00 P. M.—Reception: Thomas Normal Training School,  
550 Woodward Avenue.

## TUESDAY, APRIL 7.

Detroit Eastern High School.

9:30 A. M.—Address of Welcome.

WILLIAM C. MAYBURY, Mayor of Detroit.

Response,

Dr. WATSON L. SAVAGE, President of A. A. A. P. E.

President's Address.

Business.

\*After the program will be found all of the business matters that came before the Convention. After the business section will be found the addresses and papers.—ED.

- 2:30 P. M.—I. "The Action of Two-Joint Muscles."  
 Dr. WARREN P. LOMBARD, Professor of Physiology, University of Michigan.
2. "The Place of Automatism in Gymnastic Exercise,"  
 Miss JESSIE H. BANCROFT, Director of Physical Training, Public Schools, Borough of Brooklyn, New York City.
3. "Blood Pressure in Exercises of Strength, Speed and Endurance."  
 Dr. JAMES H. MCCURDY, Director of Y. M. C. A. Training School, Springfield, Mass.
4. "Effect of Exercise on the Pulse Rate,"  
 Mr. WILBUR P. BOWEN, Instructor in Physiology, University of Michigan.
5. "Physical Directorship,"  
 Dr. HENRY F. KALLENBERG, Director of Physical Courses, Secretarial Institute Training School, Chicago, Ill.
- 7:30 P. M.—Light Guard Armory.  
 Exhibition of Practical Work, Schools and Gymnastic Societies of Detroit.

### PROGRAM.

#### PART I.

- Overture.....Great Western Orchestra.
1. Calisthenic Exercises.....Children's Detroit Orphan Asylum.
2. (a) Dumb-bell Exercises, Alger School, } .....Public School Classes.  
 (b) Competitive Ball Game,
3. Bar-bell Exercises.....Members of Y. M. C. A.
4. (a) Dumb-bell Exercises, } .....Members D. A. C.  
 (b) High Jump,
5. Class Work on Parallel Bars.....Boys, Eastern High School.
6. Dancing Roundel.....Girls, Socialer Turn Verein.
7. (a) Indian Club Exercises, } .....Boys, Central High School.  
 (b) High Jump,
8. Wand and Dumb-bell Exercises.....Boys, Western High School.

#### PART II.

- Selection.....Great Western Orchestra.
9. Indian Club and Dumb-bell Exercises...Members Bohemian Turners.
10. Class Work on Flying Rings.....Boys, D. S. T. V.
11. Indian Club Swinging.....Girls, Eastern High School.
12. Pole, Wand, Dumb-bell and Club Exercises...Members D. S. T. V.
13. Class Work on Six Horses.....Boys, Western High School.
14. Apparatus Work (at same time).  
 (a) Horizontal Bars.....Socialer Turn Verein.  
 (b) Parallel Bars.....Y. M. C. A.  
 (c) Long Horse.....Bohemian Turners.  
 (d) Side Horse.....D. A. C.  
 (e) The Buck.....Boys, D. S. T. V.
15. Pyramids on Apparatus.....Members, D. S. T. V.

## Convention Program.

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WEDNESDAY, APRIL 8.

8:30 A. M.—Cars leave Cadillac Hotel for Ypsilanti.

10:30 A. M.—Exhibition of Practical Work,

Women's Gymnasium, State Normal College, Ypsilanti, Mrs.  
Fannie Cheever Burton, Director.

### PROGRAM.

#### PART I.

1. Figure March with Rings.....2d year pupils.
2. Indian Club Swinging with Body Work.....2d year pupils.
3. Military and Star Marching.....3d year pupils.
4. Irish Lilt.....2d year pupils.

#### PART II.

5. Swedish Gymnastics.....2d year pupils.
6. Aesthetic Gymnastics.....3d year pupils.
7. Hoop Drill.....2d year pupils.
8. Mass Dumb-bell Drill.....1st year pupils.

12:15 P. M.—Cars leave Gymnasium at Ypsilanti Normal College for  
Ann Arbor.

1:00 P. M.—Luncheon at Prettyman's.

2:00 P. M.—SECTION MEETINGS.  
University of Michigan.

SECTION ON NORMAL SCHOOLS—Sara Caswell Angell Hall.

President, BARONESS ROSE POSSE, Director Posse Gymnasium,  
Boston, Mass.

1. President's Address, The Value of Competitive Gymnastics.
2. "The Value of Psychology in the Preparation of the Teacher  
of Gymnastics,"  
Dr. WILLIAM O. KROHN, Chicago, Ill.
3. "Normal Schools of Germany,"  
Dr. FRED E. LEONARD, Oberlin College, Oberlin, O.
4. "Physical Training from the Physician's Standpoint."  
Dr. G. VAN BUSKIRK BUEHLER, Boston, Mass.
5. "The Place of the State Normal School in the Correlation of  
Physical Examinations and Physical Exercise in Public  
Schools,"  
Dr. WILLIAM W. HASTINGS, Y. M. C. A. Training School,  
Springfield, Mass.

**SECTION ON ANTHROPOMETRY—New Medical Building.**

President, WILLIAM W. HASTINGS, Ph.D., International Young Men's Christian Association Training School, Springfield, Mass.

1. President's Address, "Present Tendencies in Physical Examination."
2. Universal Test for Strength, Speed and Endurance of the Human Body.  
DUDLEY ALLEN SARGENT, M.D., Harvard University.
3. The Relative Value of Strength Tests, and Some Methods of Taking these Tests. JOSEPH E. RAYCROFT, M.D., The University of Chicago.
4. The Physical Examination in Normal Schools and Public Schools.  
C. E. EHINGER, M.D., West Chester State Normal School.
5. Report of the Present Status and Special Problems of Anthropometric Examinations in the Physical Work of the Young Men's Christian Associations. GEO. L. MEYLAN, M.D., Boston Young Men's Christian Association.
6. "Some Anthropometric Data of Western College Girls," Miss ANNE BARR, University of Nebraska.

**SECTION ON ELEMENTARY SCHOOLS—New Medical Building. President, Miss ADA FRANCES THAYER, Director of Physical Training, Public Schools, Syracuse, N. Y.**

1. President's Address, "Physical Training in Relation to Other Subjects of the School Curriculum."
2. "Gymnastic Games and Plays in the Curriculum of the Elementary Schools." Dr. E. H. ARNOLD, Director of Physical Training, New Haven Public Schools.
3. "Devices," Miss MABEL PRAY, Supervisor of Physical Training, Toledo, Ohio.
4. "Some Fundamental Principles Underlying School Gymnastics," Dr. LUTHER HALSEY GULICK, New York City.

4:00 P. M.—Reception, Barbour Gymnasium.

6:00 P. M.—Tea for Delegates.

Given by Women's League, University of Michigan.

7:30 P. M.—Exhibition of Practical Work.

Barbour Gymnasium—Men and Women of University of Michigan, directed by Dr. Alice G. Snyder, Director of Barbour Gymnasium, and Dr. Geo. F. May, Instructor in Waterman Gymnasium.

**PART I.**

1. Entrance March.....Classes of Barbour Gymnasium.
2. Parallel Bars.....Michigan Gymnastic Team.
3. Swedish Gymnastics.....Freshmen.
4. Wand Drill.....Sophomores.
5. Triple Tumbling.....Messrs. Tony, Weiland and Whitlark.

## Convention Program.

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### PART II.

6. Artistic Gymnastics.....Juniors and Sophomores.
    - (a) Swedish Folk Dance.
    - (b) Fancy Steps.
    - (c) Stage March No. 1.
  7. Club Swinging.....Dr. Geo. A. May.
  8. Apparatus Work.....Directed by Miss Stewart.
    - (a) Horse.
    - (b) Giant Stride.
    - (c) Rings.
    - (d) Hurdles.
  9. Foil Fencing.....Messrs. Nargoski and Gradle.
  10. Basket Ball, Modified Rules.....Juniors vs. Sophomores.
- 9:45 P. M.—Cars leave the University at Ann Arbor for Detroit.

THURSDAY, APRIL 9.

### EASTERN HIGH SCHOOL.

- 9:30 A. M.—I. SYMPOSIUM: "PRESENT CONDITION OF GYMNASICS AND ATHLETICS IN THE UNITED STATES."

COLLEGE WORK—Dr. James A. Babbitt, Haverford College, Haverford, Pa.

NORMAL SCHOOLS—Delphine Hanna, A.M., M.D., Director of Physical Training in Women's Department, Oberlin College, Oberlin, Ohio.

NORTH AMERICAN GYMNASIIC UNION—Dr. Henry Hartung, Chicago, Ill.

YOUNG MEN'S CHRISTIAN ASSOCIATION—Mr. Geo. T. Hepbron, New York City.

ATHLETIC CLUBS—Mr. James Sullivan, New York City.

2. "The Value and Relation of Physical Exercises to Methods for the Cure of Stammering and Stuttering," Mr. GEO. A. LEWIS, Lewis Phonometric Institute and School for Stammerers, Detroit, Mich.

2:30 P. M.—BUSINESS MEETING—Turkish Room, Cadillac Hotel.

- 8:00 P. M.—Address, "The Place of Physical Training in Education," President L. H. JONES, State Normal College, Ypsilanti.  
Address, "Physical Training and Recesses in Factory Improvement Work," Mr. GEO. A. TOWNSEND, Jr., Head of Advance Department, National Cash Register Co., Dayton, Ohio.

## PROCEEDINGS OF THE CONVENTION.

The Convention was called to order by Mr. Bowen, of the Michigan Society. Officers of the Convention were elected as follows:

*President*—LUTHER HALSEY GULICK.

*Vice-President*—WILBUR P. BOWEN.

*Secretary*—GEORGE W. MEYLAN.

The following committees served the Convention.

*Credential Committee.*

MARY MULLINER, L. K. BAKER,  
CLARK W. HETHERINGTON.

*Auditing Committee.*

EVALINE YOUNG, CLARK W. HETHERINGTON.

*Resolution Committee.*

DUDLEY ALLEN SARGENT.

*Special Resolution Committee.*

E. H. ARNOLD.

It was voted to allow every delegate present to cast but one vote.

The report of the Treasurer was referred to the incoming Council for auditing, hence it will not be published until such action has been taken.

The three persons elected by the members-at-large present at the Convention in accordance with Article 95 of the new Council were:

WILLIAM E. DAY, JOSEPH E. RAYCROFT,  
J. C. ELSOM.

The old Council was instructed to continue in office till the new Council could be organized.

The following resolutions were adopted:

RESOLVED—That a vote of thanks for extended courtesies received be given to the following organizations: The local Convention Committee, the Mayor and the City of Detroit, the Public School officials, the Thomas Normal Training School, the Ypsilanti State Normal School, the University of Michigan, the Woman's League of the University of Michigan.

WHEREAS, one of the most significant movements of modern times with reference to the future of our American cities is the development of playground and vacation schools; and

WHEREAS, brilliant success has already been secured for the work in every city in which it has been adequately attempted, notably New York, Boston, Chicago, Philadelphia, Cleveland and many other cities;

RESOLVED, that the Association views with deep interest and satisfaction the important steps already taken and those contemplated for the establishment of this work in Detroit.

RESOLVED, to render the thanks of the Association to Dr. George W. Fitz for the services rendered the Association as Recording and Corresponding Secretary; to acknowledge his efforts as the first Editor of the *PHYSICAL EDUCATION REVIEW*, in establishing and organizing the journal and for the able way of conducting it in the first years of its existence; to assure Dr. Fitz of the appreciation by the Association of the considerate manner in which he continued to perform the functions of these offices though his term of office had expired during the interim between the New York Convention and the organization of the New York Council, thereby helping to tide the Association over a critical period in its existence.

A special vote of thanks was given to Miss Bancroft for the work done as Secretary in the two preceding years.

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## REPORT OF THE SECRETARY OF THE A. A. A. P. E.

COVERING THE PERIOD FROM APRIL 17, 1901, TO APRIL 1, 1903.

In April of 1901 the National Convention of the American Association for the Advancement of Physical Education was held in New York City. At that time it was decided to transfer the National Council of the Association from Boston to New York. The Physical Education Society of New York and vicinity, as a branch of the A. A. A. P. E., was, therefore, empowered to elect the members of this new Council. The following were thus elected: Dr. Watson L. Savage, Dr. Henry Ling Taylor, Dr. Mathilda K. Wallin, Dr. Luther Gulick, Miss Elizabeth C. McMartin, Miss Josephine Beiderhase, Mr. Jacob Bolin, Mr. Emmanuel Haug, Mr. J. Blake Hillyer and Miss Jessie H. Bancroft. Mr. Hillyer soon resigned, but a year later accepted a re-election. Mr. Bolin resigned from the Council in October,



1902, and Mr. George T. Hepbron was elected to fill the vacancy. The present personnel of the Council is, therefore, as follows:

Watson L. Savage, M.D., President; Henry Ling Taylor, M.D., First Vice-President; Mathilda K. Wallin, M.D., Second Vice-President; Elizabeth C. McMartin, Treasurer; Jessie H. Bancroft, Secretary.

Josephine Beiderhase, Emanuel Haug, George T. Hepbron.

J. Blake Hillyer, Luther Gulick, M.D., Editor of the Review.

The officers of the Council have remained throughout the administration as elected at the first meeting for organization.

The Secretaryship of the Council, and the Editorship of the Review were separated, and Dr. Gulick elected Editor. The offices of Recording and Corresponding Secretaries were consolidated. Miss Jessie H. Bancroft was elected Secretary and at first declined the office, but afterwards withdrew the declination and assumed office in October, 1901.

It is fitting to state in this connection that although the previous National Council and its officers went out of office in April, 1901, the work of the Secretary's office was carried on by the former Secretary, Dr. Fitz, of Boston, for six months after his term of office had expired, or until the present Secretary took office. This was an arduous and gratuitous work which Dr. Fitz's successor and the Association should acknowledge. It is also fitting to express in this connection an appreciation of the services of Dr. Fitz in the joint office of Editor of the Review and Secretary of the Association. To carry such gratuitous labors for the Association in addition to personal and professional duties was an enormous task, and the Association cannot appreciate too highly the services of Dr. Fitz in this connection.

The Association as such has prospered steadily during the two years it has been under the administration of the New York Council, and presents to-day a larger membership and a more prosperous condition in every way than ever before in its history. In 1900 the Association had a membership of 813; to-day it has, all in good standing, a membership of 1,001, and a subscription list of 72. Following is a tabular statement of the membership for 1901, 1902, and for 1903, to April 1st:

YEAR.	ELECTED.	RESIGNED.	DROPPED.	TOTAL MEMBERSHIP.
1901.....	72	5	...	819
1902.....	61	14	33	828
1903, to Apr. 1	211	6	32	1,001

The unprecedented increase in membership since January 1 of the current year is due to the very efficient work of a Committee

on Extension, appointed in October, 1902, at the suggestion of the President of the Council. The committee consists of Mr. Haug, Chairman; Miss Beiderhase, Mr. Hepbron and Mr. Hill-  
yer. This committee sent return postal cards to all members of the Association, requesting the names of persons who might be sufficiently interested in the affairs of the Association to become members. Two-thirds of the members responded, and the committee was thus enabled to address a select list of twelve hundred people with a circular letter. Nearly two hundred applications have resulted. A very substantial increase in membership in the last few months is also due to special efforts among local societies, to the officials of the Normal Schools of Physical Training and to the efforts of a few individuals.

The Council has adopted new regulations whereby all applications for membership must be accompanied by a payment of the first year's dues, and be made upon official blanks requiring a statement of the applicant's training, experience and present position, if a teacher of physical training, and bearing in all instances official endorsement by members of the Association. By this means the Association secures a professional genealogy of its members, as well as data from which to judge of the standing of applicants.

The Council has adopted a plan of publishing annually in the Review a list of the members of the Association, a regulation which assists much in the conduct of current business besides being of practical value and interest in many other ways.

One of the most important changes made during these two years has been the raising of annual dues from one dollar to two dollars, and the inauguration of a new method of collection as regards members of local societies. By this plan all dues are paid directly to the National Secretary, and one dollar is remitted to each local society annually for each of its paid up members. These remittances are made monthly as collected. The Association thus receives no extra revenue from that half of its membership that is affiliated with local societies, but the plan has proven to have the advantage of fostering local societies, which was one of its main objects.

The raising of the dues from one dollar to two dollars has met with objection but from one member of the Association. We have to-day a proportionately larger paid up membership list than ever before at this time of the year; two-thirds of the members have paid for 1903, and all but 130 for 1902. The membership list is a clear one, there being practically no names upon it that should be dropped for two years' arrears of dues.

Following is a statement of the receipts and disbursements of the Secretary's office from January 1, 1901, to March 31, 1903:

## REPORT OF THE SECRETARY'S RECEIPTS AND DISBURSEMENTS

from January 1, 1901, to April 1, 1903.

*From January 1, 1901, to December 31, 1901.*

## RECEIPTS.

January 1 to September 26—

(Dr. Fitz, Secretary)—Dues.....	\$583 50	
Subscriptions. ....	35 25	
Back Numbers and Reprints.....	88 34	
Advertising. ....	110 75	
		<hr/> \$817 84

September 27 to December 31—

(Miss Bancroft, Secretary)—Dues.....	\$75 00	
Subscriptions. ....	19 75	
Back Numbers and Reprints. ....	9 91	
From Treasurer Eberhard.....	150 00	
		<hr/> 254 66

## EXPENDITURES.

\$1,072 50

(Dr. Fitz, Secretary)—For Postage, Clerk Hire  
and Minor Expenses.....

	\$309 13	
To Treasurer. ....	508 71	
		<hr/> \$817 84

(Miss Bancroft, Secretary)—For Postage,  
Clerical Help and Minor Expenses.....

	\$174 59	
To Treasurer. ....	7 75	
Cash on Hand. ....	72 32	
		<hr/> 254 66

\$1,072 50

*From January 1, 1902, to December 31, 1902:*

## RECEIPTS.

For Dues .....	\$691 00	
Subscriptions. ....	78 83	
Back Numbers, etc. ....	119 92	
From McMartin, Treasurer. ....	50 00	
Cash on Hand, January 1, 1902.....	72 32	
		<hr/> \$1,012 07

## EXPENDITURES.

For Postage, Clerical Help and Minor Ex-  
penses. ....

	\$505 51	
To Treasurer. ....	363 49	
Cash on Hand, December 31, 1902.....	143 07	
		<hr/> \$1,012 07

From January 1, 1903, to March 31, 1903:

RECEIPTS.

For Dues. ....	\$1,156 00
Subscriptions. ....	74 13
Back Numbers, etc. ....	60 66
	<hr/>
	\$1,290 79
On Hand January 1. ....	143 07
	<hr/>
	\$1,433 86

EXPENDITURES.

To Treasurer. ....	\$739 00
Rebate to Societies. ....	295 00
Clerical Help. ....	216 78
Postage. ....	48 64
Minor Expenses. ....	16 36
Cash on Hand. ....	118 08
	<hr/>
	\$1,433 86

From this it will appear that the office was handled, since January 1, 1903, a larger business in money (\$1,290.79) than in either of the two entire years which preceded. It has been a distinct aim of the present Council to place upon a firm and vigorous business footing all financial dealings with the members of the Association. For the first time, all issues of the Review for the current year will be withheld from members who have not paid dues. A notice to that effect was mailed to each delinquent when the Review for March, 1903, was posted. This notice resulted in a large number of payments. Local branch societies of the A. A. A. P. E. appear from their increased membership to have taken on new leases of life. A new society has been formed in St. Louis and affiliated with the national organization. The Cleveland Society, which had been practically nil for several years, has recently reorganized and started afresh. There are indications that a local society may be formed in Buffalo. The Western Pennsylvania Physical Education Society, with headquarters in Pittsburg, was affiliated in 1901. It has since disbanded. There are at present eight (8) active local societies affiliated with the Association, viz., in Boston, New York, Philadelphia, New Haven, Cincinnati, Cleveland, Michigan and St. Louis.

The secretaries of local societies have been very helpful in co-operating with the national secretary to inaugurate the new method of collecting dues. When a new Constitution goes into effect it would be of great advantage for local societies to adopt uniform regulations for initiation fees, etc.

The Society of Secondary School Physical Directors was admitted as a section of the A. A. A. P. E. in March, 1903.

At the last meeting of the National Council, the Editor of the *PHYSICAL EDUCATION REVIEW* reported the magazine as up to date in its issues. For two years the magazine has been much delayed in its appearance. Your Secretary deems it but just to the Editor to say that these delays were mainly caused by unfortunate circumstances for which he was in nowise responsible. Among these may be mentioned the disappearance of the stenographic reporter of the last Convention with much of the material which was to appear in the succeeding numbers of the *Review* as proceedings of the Convention; and later, the personal illness of the Editor, followed by that of his private secretary and stenographer. A marked change of policy with regard to the *Review* was the appointment, in 1901, of a Board of Associate Editors, consisting of Dr. Thomas H. Balliet, Dr. Franz Boas, Dr. M. P. E. Groszmann, Dr. Theodore Hough, Dr. Fred Eugene Leonard, Dr. R. Tait McKenzie, Dr. Henry Ling Taylor, and Dr. Mathilda K. Wallin.

The business conduct of the *Review*, including dealings with the printer (except for reading proof), the mailing of the magazine, handling of subscriptions, etc., have been in the hands of the Secretary of the Association. The subscription list is a continually growing one, it having increased from about 40 in 1901 to 72 at the present time. The character of this list is very pleasing. It is made up mostly of medical and public libraries and of normal schools and colleges. A recent subscription was for the Imperial Library, at Tokyo, Japan. Many of these institutions have purchased as complete files of the magazine as can be furnished.

One of the most important committees of the present Council has been the Committee on Constitution, consisting of Dr. Taylor, Chairman; Dr. Savage and Dr. Gulick. At a meeting of the Council, held on December 6, 1902, this committee reported a Constitution which was ordered printed in the December *Review*, and adopted by the Council to go into effect on March 1, 1903, unless by that time a majority of the members of the Association should vote in the negative. Several local societies having objected to this method of adopting a Constitution, the Council on February 14, rescinded its action, and referred the formulation of a Constitution to a committee to be composed of members to be elected, one each, by local societies. This committee was instructed to draft a Constitution which should be presented at the first session of the National Convention in April, 1903. The committee, as finally appointed, consisted of Dr. Mary Rees Mulliner, Secretary of the Boston Physical Education Society, Chair-

man; Dr. E. H. Arnold, New Haven Physical Education Society; Dr. Luther Gulick, Physical Education Society of New York and vicinity; Dr. Eliza Mosher, representing the Southern Michigan Physical Education Society, and Miss Evaline Young, Secretary of the Pennsylvania District Association of the A. A. A. P. E., Philadelphia. The result of their labors has been presented in advance to members of the Association as a supplement to the March number of the *PHYSICAL EDUCATION REVIEW*.

Another committee, whose work has been of important interest, at least to those members of the Association who are attending the present Convention, is the Committee on Transportation for the Convention, Mr. J. Blake Hillyer. Through Mr. Hillyer's efforts, arrangements have been made with all railways running into Detroit for reduced rates, for the Convention.

The Council has for a year had under discussion some very important plans which it has been maturing. One of these, proposed by Dr. Savage, is the establishment of a Bureau of Information, where teachers of physical training might learn of positions, and employers learn of teachers. Another most important project, proposed a year ago by Dr. Gulick, and for which plans have been perfecting, is the formation of a section of the A. A. A. P. E. which shall be devoted to the encouragement of original scientific work in physical training.

In conclusion, it is more than a duty, it is a pleasure, to report the appointment and work of the present Convention Committee of the Southern Michigan Physical Education Society. In accepting the invitation of the Michigan Society to entertain the Convention, the Council felt that it was breaking through the routine into which the Association had fallen in holding its Conventions in four Eastern cities, and was giving to the large Western membership an opportunity to attend and otherwise participate in a convention which it had previously had in its vicinity but once—in 1893—at the World's Fair in Chicago. A more efficient Convention Committee the Association has never had, and especial acknowledgment is due the work of the President, Mr. Wilbur P. Bowen, of Ann Arbor, and of the Secretary, Mrs. Fannie Cheever Burton, of Ypsilanti.

Respectfully submitted,

JESSIE H. BANCROFT,  
Secretary.

After extended discussion, the following Constitution was adopted:

## CONSTITUTION OF THE AMERICAN PHYSICAL EDUCATION ASSOCIATION.

### NAME.

Article 1. This body shall be called The American Physical Education Association.

### OBJECTS.

Art. 2. The objects of this Association shall be to awaken a wider and more intelligent interest in physical education; to acquire and disseminate knowledge concerning it; and to labor for the improvement and extension of gymnastics, games and athletics.

### MEMBERSHIP.

Art. 3. The Association shall consist of members and honorary members.

Art. 4. Any person may become a member of the Association upon recommendation by two members or by a local society, election by the Council, and the payment of one year's dues.

Art. 5. The annual fee for membership shall be two dollars. THE PHYSICAL EDUCATION REVIEW shall be sent gratis to all paid-up members.

Art. 6. The dues shall be for the calendar year designated by the applicant.

Art. 7. Honorary members shall be nominated by the Council and elected by a two-thirds vote of the members present at a national convention.

Art. 8. Any member who fails to pay dues for two years shall thereby forfeit membership in the Association, provided that two notices of indebtedness, at an interval of at least three months, shall have been given. Such persons may be restored to membership only upon payment of arrearages or upon re-election and a payment of one year's dues.

### COUNCIL.

Art. 9. The government of the Association, except where otherwise provided by the Constitution, shall be vested in a National Council. The Council shall be composed as follows:

1. One member from each active local society having ten members in the National Association.
2. The President of, or other member elected by, each section of the National Association.

3. The President of the preceding Council.
4. The Editor of the *PHYSICAL EDUCATION REVIEW*.
5. Three persons elected at the national convention by members of the National Association, who are not members of any local societies.
6. Enough additional persons to make a constant working body of five in the territory in which the National Council has its headquarters. These additional persons shall be elected by the Council. They shall be known as the Executive Committee.

Art. 10. The officers of the Council shall be a President, a Vice-President from each section, a Secretary, and a Treasurer. Vice-Presidents shall rank in the order of their age in membership in the National Association.

Art. 11. The Council shall elect its own President, Secretary, Treasurer, and Editor.

Art. 12. The Council and its officers shall be elected for a term of two years.

Art. 13. The Council shall fill any vacancies that may occur in its own body.

Art. 14. The Council shall appoint its own committees, manage all the affairs of the Association under the Constitution.

Art. 15. Three members of the Executive Committee of the Council shall be a quorum for the transaction of business, provided that all legislative and other important matters shall be adopted only by a majority vote of the entire Council.

Art. 16. The Council shall arrange for the holding of a national convention at least biennially.

Art. 17. The President, or, in his absence, the senior Vice-President present, shall preside at national conventions of the Association and at meetings of the Council. It shall be the duty of the President to give an address at the national convention of the Association over which he presides.

Art. 18. The Secretary of the Council shall keep a record of the proceedings of the Council, receive and present applications for membership, collect dues, make an official report to each national convention, and perform such other duties as the Council may direct. The Secretary shall be paid an annual salary, the amount to be fixed by the Council.

Art. 19. The Treasurer shall care for and expend all funds under the direction of the Council, and shall present an account of the funds at each regular meeting of the Council and at each national convention.

Art. 20. The Council may, by a three-fourths vote, establish or discontinue the affiliation of a national section with the National Association.



Art. 21. The Council may, by a three-fourths vote, establish or discontinue the affiliation of a local society with the national convention.

Art. 22. The National Secretary shall annually send one dollar to the Secretary of each active and affiliated local society for each paid-up member of the National Association who is also a member of said local society.

Art. 23. Each Council shall hold office until its successor is elected.

Art. 24. Each Council shall determine its own headquarters.

Art. 25. When assembled in national convention the Association may amend any part of the Constitution by a three-fourths vote of the members present, provided such amendment has been approved by the National Council and published in the Review not less than three months prior to the date of the convention.

Art. 26. The convention can only by majority vote take up for discussion any act of the Council. The act of the Council may be reversed or modified by a three-fourths vote of the convention.

#### NATIONAL SECTIONS.

Art. 27. Members of the National Association who organize in the interests of some particular department or phase of physical education, irrespective of geographical lines, may become a section of the National Association upon election by the National Council.

Art. 28. Sections may be affiliated, or their affiliation canceled, by a three-fourths vote of the National Council.

Art. 29. Only members in good standing in the National Association shall be eligible to membership in any section. Membership in the section may continue only so long as the member remains in good standing in the national body.

Art. 30. Each section shall elect its own members, officers and committees, fix its own dues, and otherwise manage its own affairs so long as the general Constitution of the National Association be not violated. Proceedings shall be reported to the National Council for publication in the Review.

Art. 31. The President of each section, or some member designated by the section having ten or more members, shall be *ex officio* members and Vice-Presidents of the National Council. Their rank as Vice-Presidents shall be in the order of seniority of membership in the National Association.

#### LOCAL SOCIETIES.

Art. 32. Members of the National Association who represent a limited territory and who organize for the general interests

of physical education, provided they meet the conditions of an active local society, may become affiliated with the National Association as a local society upon election by the National Council.

Art. 33. Local societies may be affiliated with the National Association, or their affiliation canceled, by a three-fourths vote of the National Council.

Art. 34. Local societies which hold at least four meetings during each year, and report the same to the National Council for publication in the Review, shall be known as active societies. They shall receive from the National Council one dollar for that year for each member of the local society who is a paid-up member of the National Association.

Art. 35. Each local society shall elect its own members, officers, committees, fix its own dues, and otherwise manage its own affairs, so long as the general Constitution of the National Association be not violated. It is not necessary that members of local societies be members of the National Association, but only members of local societies, who are also members of the National Association, shall be entitled to vote for members of the National Council, or on other business relating to the National Association. Only members of the National Association shall be entitled to the Review gratis.

Art. 36. One member from each active local society having ten or more members who are members of the National Association, shall be *ex officio* a member of the National Council.

#### NATIONAL CONVENTION.

Art. 37. The Council shall arrange for the holding of a national convention at least biennially.

Art. 38. Conventions shall be under the direction of the National Council, and shall proceed according to an order of business prearranged by the National Council.

Art. 39. The convention shall be composed of members and guests. The members alone shall be entitled to the floor or to vote. Each member may cast but one vote.

Art. 40. The President of the Council, or, in his absence, the senior Vice-President present, shall preside at national conventions of the Associations. It shall be the duty of the President to give an address at the national convention over which he presides.

Art. 41. When assembled in national convention the Association may amend any part of the Constitution by a three-fourths vote of the members present, provided such amendment has been approved by the National Council and published in the Review not less than three months prior to the date of the convention.

Art. 42. The convention can only by majority vote take up for discussion of any act of the Council. Any act of the Council may be reversed or modified by a three-fourths vote of the convention.

PHYSICAL EDUCATION REVIEW.

Art. 43. The National Association shall publish a journal to be known as the AMERICAN PHYSICAL EDUCATION REVIEW.

Art. 44. The Review shall be sent free to all paid-up members of the National Association.

Art. 45. The Review shall be the official organ of the Association, and in it shall be printed the proceedings of the National Council and reports of all active and affiliated sections and local societies.

Art. 46. The Editor of the Review shall be elected and directed by the National Council. He shall be paid a salary, the amount to be determined by the Council.

Art. 47. The Editor shall be *ex officio* a member of the National Council.

## THE ACTION OF TWO-JOINT MUSCLES.

WARREN P. LOMBARD, M.D.,

Professor of Physiology, University of Michigan.

The subject of my paper is the action of two-joint muscles. These mechanisms can take part in the production of a great variety of movements—flexion and extension, adduction and abduction, inward and outward rotation, and those intermediate movements which are so hard to classify. I shall confine what I have to say to the method of action of the two-joint muscles which flex and extend the leg.

Similar anatomical structures are the seat of similar forms of physiological activity, regardless of the animal in which they exist. The principles which are the basis of the life phenomena exhibited by the fish, dog or monkey, are likewise the basis of similar forms of functional activity in man. The activities of a special type of mechanism can be best studied in the animal in which, through the process of evolution, it has reached its highest development. I do not know that the two-joint muscles are most highly developed in the frog, but certainly they may be studied far more advantageously in that animal than in man. Since the principles governing their action must be the same in both, I have no hesitation in inviting your attention to a consideration of the method of action of the two-joint flexors and extensors of the hind leg of the frog.

At first sight it seems strange that Dame Nature, after she had experimented so many years, should have been satisfied to construct a jumping machine on the lines of a frog. There can be no doubt but that he jumps well—the performance greatly exceeds the promise.

The leg of the frog is made up of a chain of long, slender, fragile levers, somewhat enlarged at the ends, where there are slippery surfaces which fit each other about as well as a cartwheel fits the track it has made. These levers are bound end to end by string-like ligaments, which are strong and inelastic, and so attached that they prevent the ends of the adjacent bones from separating very much; these ligaments and the shape of the joint surfaces determine more or less definitely (in some cases rather less than more) the direction in which movements can take place. The whole apparatus looks as if it might make a good flail, but certainly does not impress a casual observer as a suitable structure to which to apply the power which is to hurl the body of the frog through the air or drive it through the water.

The power which moves these levers is not developed at a

central station, but by a very large number of separate motors which are fastened to the levers by strong bands or cords. These motors the muscles are, when at rest, extensible, flexible, flabby; in certain of the positions of the leg, some of the muscles are attached so loosely that the slack of the cords is not taken up, while the cords of other muscles are tense.

Some of these muscle-motors cross over one joint and are fastened to the adjacent bones; these are called one-joint muscles. Others extend across two joints and the intervening bone, and are called two-joint muscles.

The action of the one-joint muscles with some exceptions is quite simple; when the muscle shortens the points to which it is attached approach and the bones to which it is fastened near each other. They do not always move in the direction of the line connecting the points of attachment, however. The tendon which binds a given muscle to a bone may wind round the side or head of the bone, running in a groove as in a pulley, and may cause movements quite different from what one would expect. Indeed, the curious method of attachment of the ligaments and tendons causes the leverage of muscles to change by every new position of the bones on which they act; this is especially true of two-joint muscles and at least one of the one-joint muscles, in a certain position of the joint on which it acts, may cause the bones which it connects to separate instead of approach.

As the name implies, a two-joint muscle crosses over two joints; the belly of the muscle lies on the intervening bone and moves up or down the bone according as it is pulled on from one end or the other. Most of the largest and strongest muscles of the leg of the frog are two-joint muscles, and most of them are so attached that they act chiefly as the flexors of the one and extensors of the other of the joints which they cross. Now, by swimming and leaping, the whole leg has to be vigorously extended, and after the stroke or the leap the whole leg has to be rapidly flexed. How can muscles which, at the same time, flex by one end and extend by the other, be of use either for flexion or extension of the limb?

If the bone at either of the ends of a two-joint muscle be fixed by other muscles, or by some external force, the muscle behaves for the time like a one-joint muscle. If both joints are free to move, there is a very different state of affairs. The muscle does not merely act like two one-joint muscles which are tied together and which contract simultaneously. A two-joint muscle makes a connecting link between two movable bones, and transfers any strain imparted to one of these bones to the other.

As I have said, most of the two-joint muscles produce flexion in one and extension in the other of the joints which they cross.

If one of the joints be flexed, therefore, the other joint will be extended through the strain brought upon it by the muscle. This is what I mean by the tendon action of the muscle—its capacity to act passively like a tendon and transfer the strain brought upon it to a distant part. This may be readily seen on a model.

The muscles are normally attached to the bones under slight elastic tension. This tension is increased by the stream of feeble reflex stimuli continually coming to them from the central nervous system, which gives them what is known as reflex tonus. When the muscle contracts vigorously, it shortens, the slack is taken up, and it can act like a strong elastic cord. It is in the contracted state that its tendon action finds its most complete expression.

Because of the tendon action of two-joint muscles, any force which flexes or extends the hip, knee or ankle, tends to flex or extend all the rest of these joints. Permit me to demonstrate this effect by this model, which will help you to understand why a frog is hard to catch.

We are in the habit of speaking of antagonistic muscles. In general, antagonistic muscles lie on opposite sides of a bone, but act on the same joint and move it in opposite directions. Take for example the gastrocnemius, and tibialis-anticus-longus of the frog. The gastrocnemius flexes the knee and extends the foot, the tibialis-anticus-longus extends the knee and flexes the foot. They are doubly antagonistic, antagonistic at each joint. To take an example from man—the rectus-femoris flexes the hip and extends the knee, and the semi-membranosus extends the hip and flexes the knee.

It is generally conceded that antagonistic muscles may contract under certain conditions at the same time, and that there are two ways in which their antagonistic action may be employed. They may act to direct the movement of a bone which another muscle moves. They may act to moderate a movement by partially opposing it, one muscle contracting, the other lessening its contraction to correspond, as when a finger is slowly and steadily brought to point at some object. Two-joint muscles, when one of the joints which they cross is fixed, may act like one-joint muscles and be properly considered antagonists. If both of the joints which they cross are free to move, however, these muscles cease to be antagonists, and instead of opposing each other, may reinforce one another. They become pseudo-antagonists.

To make this clear I must call your attention to a seeming paradox. A muscle can cause the extension of a joint which it can flex. In order that this can occur, the following conditions are essential:

- a. It must have the better leverage at the end by which it acts as extensor.

b. There must be a two-joint muscle that flexes the joint which the muscle in question extends, and extends the joint which it flexes.

c. It must have sufficient leverage and strength to make use of the passive tendon action of the other muscle.

This model illustrates the way in which two-joint muscles may act as pseudo-antagonists, and each re-enforce the action of the other.

The energy of the gastrocnemius and tibialis-anticus-longus is transmitted as by an endless chain, in a circle around the ankle and knee, the energy always progressing in the direction of the better leverage.

The same is true of the muscles of the thigh of the frog. The triceps and semimembranosus, for example, are pseudo-antagonists when both the hip and knee are free to move.

When all the two-joint muscles of the leg are contracting at the same time, as is without doubt the case when the frog leaps, the energy is transmitted by the muscles, as by an endless chain, having the form of a figure 8, with the crossing at the knee, and progresses in the direction of the better leverage, *e.g.*, from the gastrocnemius around the ankle to the tibialis-anticus-longus, from this across the knee to the semimembranosus, from this around the hip to the triceps, from this across the knee to the gastrocnemius, the point of origin. Thus each muscle helps all the rest to produce the extension of hip, knee and ankle, and all the two-joint muscles act as a unit to produce the leap.

The importance of the leverage which the muscles have by different positions of the joints has been greatly underestimated. The phenomenon just described is dependent on the leverage which the two-joint muscles have when the leg is in the sitting position. Were it not that the gastrocnemius, for example, has, in this position, a better leverage at the end which extends the ankle than at the end which flexes the knee, the jump could not take place, or be but imperfectly carried out. The leverage of the muscles is by no means constant, but changes with each new position of the joints. The flexor leverage of the gastrocnemius on the knee, gradually gains as the knee is extended, while the extensor leverage on the ankle remains quite constant until the joint is nearly extended and then lessens. The way in which the leverage of the different muscles changes is different for each muscle, and we shall never really understand the true action of the muscles until this matter has been thoroughly studied.

Before I close, I want to show you that the pseudo-antagonistic action of two-joint muscles, which is caused by the fact that one can employ the tendon action of its opposite, can occur in man as well as in the frog.

The rectus femoris and the semimembranosus of man, for example, which play a prominent part in the act of walking, are pseudo-antagonists, in that, although apparent antagonists, they may help each other. This model shows how the rectus can extend the knee and flex the hip, and the semimembranosus can flex the knee and extend the hip. When the leg is thrust back at the end of the step, the knee is straightened by the rectus, and as this extension of the knee pulls on the semimembranosus, the hip is also extended, the rectus using the tendon-action of the semimembranosus to extend the hip of which the rectus is a flexor.

Duchenne says that the rectus does not take part in the forward swing of the leg. At all events, at the end of the step the semimembranosus contracts and flexes the knee, the rectus is wound round the flexing knee and is shortened, and consequently the hip is flexed, *i.e.*, the semimembranosus causes flexion of the hip, of which it is an extensor. In jumping, in the case of the man as of the frog, the muscles on both of the front and back of the thigh contract, and by virtue of their tendon action and leverage each helps the other. The rectus by straightening the knee pulls on semimembranosus and extends hip; the semimembranosus extending hip pulls on rectus and extends knee. If the muscles on the front of the lower leg of some man crossed over the knee, as they do in the frog, how he would break the records.



## REPORT ON THE PRESENT STATUS OF ANTHROPO- METRIC EXAMINATIONS IN THE YOUNG MEN'S CHRISTIAN ASSOCIATIONS.

GEO. L. MEYLAN,  
Columbia University.

Your chairman asked me to present a report on the present status of anthropometric examinations in the Young Men's Christian Associations.

Before presenting the conditions as they are now, I shall give a brief résumé of the development of this phase of work in the Associations. The first gymnasiums in the Young Men's Christian Associations were opened about 1870, but during the first ten years there were few instructors employed and they did nothing with physical examinations. About 1880 a few of the Association physical directors commenced to make physical examinations. There were no books or guides on the subject and these examinations were very crude. The principal object of the instructors at that time was the development of large, strong muscles, and the examinations included only a few measurements, principally girths, to determine the size of the muscles. The blanks used contained about the following measurements: weight, height, girth of neck, chest, waist, biceps, forearm, thigh and calf. No medical examination was made, as no physicians were employed. During the latter part of that decade Drs. Luther Gulick, J. Gardner Smith and others introduced in the Associations the modern anthropometric examinations on the same lines as the examinations made by Dr. D. A. Sargent at Harvard, Dr. E. M. Hitchcock at Amherst, and Dr. J. W. Seaver at Yale.

The blanks used at that time included weight, height, breadths, depths, girths, lung capacity, strength of right and left forearm, dip and pull up; only five or six questions of personal history were asked. Charts were compiled about 1890, with data obtained in the larger Associations, and during the next five or six years there was a very wide extension of anthropometric examinations in the Association gymnasiums. The International Committee through its publishing department supplied the Associations with record blanks. These blanks were used very generally in the Association.

In 1897 the Young Men's Christian Association Physical Directors' Conference met in Springfield, Mass., and appointed a committee to revise the anthropometric blank furnished by the

International Committee. Some directors were asking for a more extensive blank; others urged a shorter blank because they lacked the time necessary to make a full examination; there were still others who thought the long blank too long and the short blank too short. An effort was made to satisfy everybody by recommending three sets of blanks, a short, an intermediate and a long blank. The short blank was similar to that previously used except that seven or eight measurements and tests were left out. The intermediate blank was practically the same as the old blank except that the history questions were amplified, and the large blank was similar to the official blank adopted by the American Association for the Advancement of Physical Education. A chart was compiled by Dr. Luther Gulick to be used with the small blank, but no charts were available to use with either the intermediate or the long blanks.

The record blanks as furnished by the International Committee were printed on large sheets of paper either in loose sheets or bound in books of 200.

Having reviewed the development of anthropometric examinations in the Young Men's Christian Associations up to the present, we may now consider what is their present status. In order to get accurate information on the subject, I obtained copies of the blanks and charts used in forty of the largest and most representative Associations. It would take me too long to describe all these charts, but I shall attempt to give you some general deductions from a careful perusal of them all.

There are 14 distinct blanks and charts. The set used by the largest number of Associations is the small blank and chart published by the International Committee. There are seven blanks and charts compiled by individual physical directors and used by two or more Associations, and six more sets compiled and used by some individual physical director in his local field.

The difference between these various blanks is really remarkable. They may be classed under four general headings:

1st. Those containing only the weight, height, one or two breadths, about 15 girths, and two or three strength tests or none at all. This is practically the short blank of the International Committee.

2d. Those approximating the intermediate blank of the International Committee. They contain weight, two lengths, five or six breadths, three or four depths, about 15 girths and the regular seven intercollegiate strength tests.

3d. The extensive blank, practically the official A. A. A. P. E. blank, except that a few measurements are usually omitted.

4th. Blanks containing a large number of strength tests, the weight and height, but no other measurements.

The space devoted to history in these blanks varies from five or six to nearly one hundred questions.

As to method of recording, the large majority of these blanks are printed on paper, either loose sheets or bound in book form. The regular card filing system is in use in a few places, where of course it gives entire satisfaction.

The various charts used with these blanks present as great a variety as the blanks. Ignorance of the mathematics of anthropometry on the part of the compilers of some of these charts is very apparent.

One of these charts has two tables, one giving the "measurements, weight and height of the average adult," and below that "the ideal measurements showing what one should be." No authority or source is given for these valuable data. The difference between cold material facts and the ideal is very well illustrated in these two tables. For instance, the average adult 6 ft. in height weighs 170 lbs., has a neck 15" in girth, biceps 13 $\frac{1}{4}$ " and calf 15". But the ideal adult of 6 ft. weighs 185 to 196 lbs., has a 17" neck, biceps 17" and calf 17". There is no doubt about such measurements belonging to an ideal individual, for they are certainly not to be found in a material one.

Another interesting point about these charts is the difference in the average or mean in the 50% column, showing that some of them must have been compiled from insufficient or inaccurate data. In eight of these charts the

average height	varies from	66.5 to	68",	diff. =	1.5"
weight	"	124.7	" 139	"	14.8
chest inflated	"	34.5	" 37.5	"	3"
right biceps	"	10.6	" 12.1	"	1.5"
thigh	"	18.9	" 20.2	"	1.3"
lung capacity	"	220	" 254	"	34"

The next point I wish to consider is the attitude of the Young Men's Christian Association physical directors on this question of anthropometric examinations, blanks and charts. During the past three or four years there has been a very marked change in the attitude of the directors towards examinations. Some have gone so far as to give up making examinations except for a few members who insisted on having one. I quote from one of these men in a large Association: "I am taking less and less stock in tape and calipers. I see the advantage in school and college for a system of measurements. With the Y. M. C. A. and its fluctuating membership I do not think it pays at all."

Other directors go to the other extreme and give an increasing amount of time to each examination. I quote from one of these: "In reply would say that our physical and medical examinations

are given more prominence than any other feature of the department. I spend thirty to forty minutes with each man and find it the best invested time of any. I spend even more time in my examining room than on my gymnasium floor, and yet I personally conduct sixteen classes a week."

The majority of directors, however, are not trying to give up examinations or to give them undue prominence, but they are trying to keep up with the progress of anthropometry and make as good examinations as possible. On one point they are nearly all agreed; they feel a great need for some simple, useful and uniform examination in all the Associations. I quote from a few out of many letters expressing this sentiment: "We certainly need a short, concise, comprehensive system that has not the idea of contributing to the science of Ethnology, but which will be of immediate practical value to the individual man. I got up my blanks in despair of anything better, but am not in the least satisfied with them or anything else that I have seen yet."

Another writes: "I shall be one of many delighted directors, I am sure, if some sort of uniform system is arranged."

Another says: "That the chart enclosed is not ideal is a fact we have been aware of for some time and one you will detect at first glance; it is of no practical value."

One more quotation: "The chart is very unsatisfactory and I cannot say that the list of measurements is what we would wish for the best work among men."

Having seen that there is now a great variety of blanks and charts used in the Association, and a desire from the majority of directors for a short, simple and uniform system, we may now for a few moments consider the difficulties which are characteristic of Young Men's Christian Association work in making satisfactory anthropometric examinations.

1st. The large majority of Association directors have no assistants and must not only take all the measurements and tests personally, but must also record them, thus taking fully twice as much time.

2d. The average director has to teach classes, give out lockers, coach basketball and athletic teams, get up exhibitions and contests, teach a Bible Class and First Aid Class. With this multiplicity of duties the majority of directors rightly say that they cannot devote much time to physical examinations.

3d. Another difficulty is the fact that new members join the Association gymnasiums all through the year; this makes it most difficult to make satisfactory examinations, for while a director is making his second examinations in March or April he has to examine also a number of new members.

4th. Still another great difficulty is the tremendous variety of

members found in the ordinary Association gymnasium. There are all kinds, men of different color, of many different races, youths of 15 and 16 and men of 50 and 60, mechanics and students, business and professional men, rich and poor, fat and lean. Now when we attempt to plot the measurements of the prosperous, rotund business man of 50 on the same chart that we plot the measurements of a thin, weak, poorly-fed lad of 16 or 17, we certainly doubt the value of anthropometrical charts.

In view of these difficulties the following principles may serve as a guide in arranging a uniform blank and chart to be used in the Young Men's Christian Associations.

1st. This blank and chart should be short, each examination not requiring over ten or fifteen minutes' time except in occasional special cases.

2d. As to method, the blanks should be on the card system for filing, and the history, measurements and medical examination should be, if possible, on the same card.

3d. The history card should be filled out by each member previous to the examination in order to save the examiner's time.

4th. The contents of the blank present the greatest difficulty to satisfy everybody. Perhaps we can get at something definite by a process of elimination. Probably all would agree that there is no place in an Association blank for anthropological data such as cephalic and nasal indices, color of eyes and hair, lengths except length of trunk, heights other than total height, and girths of joints. This blank would then include in a general way weight, height, length of trunk, breadth of shoulders, chest and waist, depth of chest and waist, and girth of neck, chest, waist, arm, forearm, thigh and calf. As to strength tests the seven inter-collegiate tests are probably the best we have now, but there is good reason for desiring some modification, particularly in the strength of legs.

The history portion of the blank should be made just as short and simple as possible; probably a dozen well-selected questions would give all the necessary data.

As to charts, we certainly ought to have a series of age charts from 15 to 25 years, and one for all above 25, or possibly one for 25 to 30, and another for all above 30. Whether or not further subdivisions, according to height, are desirable, is somewhat doubtful. A uniform manual could also be gotten up and used by all Associations to advantage.

In closing, I wish to make a further recommendation. In order that the Associations may have a uniform blank and chart, it is necessary to have a sort of anthropometric bureau or clearing house where data may be collected from all over the country and the work of compiling the charts be done in a thorough and

scientific manner. The local Association can not do this work as it should be done, but we have in the Association two Normal Schools where this work could be done very well. The school at Springfield could be the clearing house for the East and the school in Chicago do the same for the West, and the two schools co-operate, or Springfield, which is larger and better equipped for this work, could be a clearing house for the whole country. For the publication and distribution of blanks and charts we have a thoroughly organized agency in the publication department of the International Committee in New York.

Some of the advantages to be derived from such a plan are as follows:

1. Uniformity in all Associations; increased value of examination to individuals; this would enable a member transferring his membership to another Association to compare his chart with his previous examination.
2. Greatly increased scientific value and accuracy of the records and charts.
3. A very large saving of time to physical directors.
4. A very considerable saving of money by co-operation in printing.

## THE VALUE OF PSYCHOLOGY IN THE PREPARATION OF A TEACHER OF GYMNASTICS.

WM. O. KROHN, PH.D.,

Chicago, Ill.

We often hear it stated that any teacher needs to know psychology. Teachers of gymnastics are apt to think this statement more applicable to teachers of other subjects than our own *Fach* because it is their business to educate the mind, but as workers in one distinct segment of the educational circle, is it not our vocation to educate the mind as well as the body? It is to me unthinkable that there is any one here to-day who fails to subscribe in toto to the oft-repeated statement of that old sage and philosopher, Malebranche, to wit: "We have not to train a soul alone, nor only a body, but a man; and we cannot divide him."

We all recognize the fact that physical education must be educative in the fullest sense of the term. This certainly means that we as teachers of gymnastics must have in mind not only the body culture but the soul and mind culture as well. In common with all other teachers we must hold that the object and aim of all education in our modern schools is the development of the best type of citizenship possible from the more or less uncouth raw material placed under our care and tutelage. By best citizenship we mean best physically, best mentally, best morally. I say best physically first because it is one of truth's most firmly established dicta that without the soundest physical basis it is impossible to have the best mental development, and without the best physical and menal development it is certainly impossible to have the soundest moral development.

But we do not study psychology simply because as teachers it is in a sense our business to educate the mind; neither do we study it because of the value it may be said to have as a mental drill. The disciplinary value of the study of psychology is, to my mind, very inconsequential in the discussion of this topic. As teachers or students preparing to be teachers of gymnastics, let me say emphatically that we must and do study psychology for its *practical* value. If psychology is to be of no *practical* value to you, then you should by all means leave it alone; give it no more attention so far as a means of preparation for your work than you would to Theosophy or some other indefinite "ism," if it will not in a practical way increase your efficiency as a teacher or student of gymnastics.

In speaking of the immense practical value of psychology to the teacher I shall have in mind only the modern up-to-date psychology of these latter days, for twentieth century teachers must and do demand twentieth century psychology, and not the dry, scholastic discussions that smack of the dark ages. The data of modern psychology are gained from observing the child's growing, active mind in all its phases as it presents itself to the teacher from day to day the year through. So, then, I shall insist that we study psychology for practical reasons. A man who intends becoming a high-class architect studies descriptive geometry, not merely because it will develop his mind, but because of the use it will be to him; so we should study psychology because we are persuaded that the knowledge gained thereby will make one a more successful teacher, i.e., a more *tactful* teacher.

But you at once ask: How will it do this? Let us first answer the question, What is teaching? In the first place we will agree that to teach is *not* to *impart* instruction, for there is no way by means of which the smallest scrap of knowledge can be conveyed from the mind of the teacher to that of the pupil. Cramming facts and hearing recitations is not teaching. We all know that all education is self-education, that the child's mind must be aroused by the teacher to act in and for itself. To teach is to incite the child's mind to activity, i.e., into activity which would not have taken place without being thus evoked.

By adopting the methods of modern psychology the teacher can learn just what are the contents of the child's mind on entering school. He can also, by the aid of this same experimental psychology, ascertain the child's capacities in all the more important lines, such as the memory power and its power of attention. The teacher, then, has two things before him, (1) the pattern, i.e., the ideal citizen which he wishes the child to become, and (2) the actual child before him, i.e., the raw material. But the most important matter is the third point, viz.: What methods of teaching can be best employed to convert this untutored child, this raw, crude material, into the finished product—the ideal citizen? This is the most difficult question of all. This is the question that requires the most tact and skill on the part of the teacher in effecting the proper solution. But at the same time it is the question toward the solution of which psychology contributes the most readily and furnishes the largest amount of help. Even the most crude and undeveloped psychology will tell us to select those subjects for study that will be of the most practical use and fitted to his periods of development. We would hardly teach the child to sing Italian opera before we would teach it to read and spell and count. We would not insist upon it making a Delsartian bow or knowing how to waltz before teaching it some



of the simple principles of hygiene. Even the Indian teaches his child to bend the bow before allowing his to be adorned with feathers and paint. Humboldt tells us that an Orinoco Indian, though quite regardless of bodily comfort, will yet labor for a fortnight to purchase pigment wherewith to make himself admired; and that the same woman who would not hesitate to leave her hut without a fragment of clothing on would not dare to commit such a breach of decorum as to go out unpainted. It is a well-known fact that colored beads and trinkets are much more prized by wild tribes than calicos or broadcloths.

So it is in a less degree with the young "aborigine" who presents himself at the school-room door in all parts of our broad land. He must be taught the useful practical things. It is only thus that his mind can become better developed. It is only thus that he can be made to become what we desire him to be—the ideal personality. But would you develop him in only one direction? No, indeed. You are seeking for a general development of all his powers, not a single one which is to be developed at the expense of the others. Pitching baseball gives a trained eye and obedient arm and hand, and yet you want your pupil to be more than a baseball pitcher.

So, then, the real teacher, who has a true conception of his work and mission, turns to psychology, and, with its aid, and by means of its conclusions, settles three things: (1) What is this child pupil as he presents himself to me? What are the contents of his young and growing mind? What are his powers and capacities as he now stands before me? (2) What do I desire him to become? Into what product should I conscientiously labor to fashion and mold him? and (3) What method must be employed in order that these aims and ideas may be realized? What knowledge is of most worth in developing the child mind into the perfected type of mental life and action? You will find that psychology, in its modern experimental form, will be your chief help. By it you can observe the precise effect which the acquiring of this or that piece of knowledge will have on the mind, and in this way be enabled to estimate its value as an agency in unfolding the child's latent mental powers. It is, of course, very important to have an aim. You must know what you are aiming at as a teacher. Unless you have settled this you can never succeed. You may just as well tear your certificate, or other credentials, to shreds and scatter the bits to the winds, if you have not a definite purpose in mind with reference to your pupils. How could an architect build an attractive house if he began to construct it without a plan, and worked from day to day without having in mind a picture of the house he was going to build. If the blacksmith or wheelwright must have in mind an image of

the thing he is about to make, how can you, as teachers, hope to succeed with the children unless you have the clearest conception of what you wish them to become as a result of your leadership?

We should not only follow with religious zeal the oft-repeated maxim, "Learn to do by doing," but rather should we weave into the warp and woof of life's creed as teachers the fundamental truth, "Learn to do by knowing." As teachers of any subjects in the public schools, whether it be gymnastics, arithmetic, grammar or history, we will achieve the largest degree of success if we take advantage of the deliverances of modern genetic psychology in reference to the order in which the child's mind unfolds its various powers and capacities.

The *first* period is Sense development; *second*, Memory; *third*, Imagination; *fourth*, Judgment and Comparison; *fifth*, Curiosity; *sixth*, Reasoning.

All child minds in their growth unfold in the same order, though they do not develop at the same rate.

As wise teachers of gymnastics, we will place those games that appeal to the senses of the child directly first in our physical education curriculum. The child must see, feel, hear, and thereby gain a fund of raw material through his senses which will serve as a basis for the more complicated physical exercises later. All the raw material of thought is gained through the senses; everything that we compare, everything that we reason about is gained in the form of raw material through the avenues of sense perception.

In this connection let me say that modern psychology has laid great stress upon the necessity of *clearly* experienced sensations of motion and position in order that perfect muscular control and co-ordination can be attained. It has been clearly demonstrated that sensory paralysis always involves motor paralysis, that is, if the child cannot feel he will never move. How essential it is, then, in teaching the child a new exercise, to have him clearly feel the sensations of movement and position of the arms, legs, back and general poise of the body. And we must be certain that he observes these sensations of position and motion in order that he can properly go through the exercise in repeated drill.

After the gymnastics and games that appeal clearly and directly to the senses, we are warranted in introducing those games that appeal to memory; we can complicate our exercises, involving as elements of the complicated exercise the impressions of former simpler exercises that are stored up in Memory's marble halls.

The next step in complication of exercise in order to tally with the child's unfolding powers must needs appeal to his rapidly developing faculty of Imagination. How frequently we are defeated in our work in gymnastic instruction because of the incapacity

of the child to image the exercise not only in its totality but in its various parts. He is unable to image certain postures, flexions, bendings and turnings, and is therefore unable to execute them. This is because of the fact that at the stage of his career when Imagination was unfolding so rapidly and acting with such vigor and energy, the exercises were not given that would appeal to the employment of his imagination.

The next stage in his unfoldment makes necessary those forms of exercises that appeal to the powers of Judgment and comparison. After these are assimilated we can introduce those exercises that have a certain unknown quantity, the result of which will appeal to his curiosity and thereby evoke the most intense interest. Still later we can have the most complicated exercises and drills that we are able to present, for then is the child ready for us to appeal to his Reasoning.

The principle of adapting exercises to the child's mental growth is as vital and fundamental as the adaptation of exercises to the child's physical growth.

The various exercises that are given place in the curriculum of any system of physical education have earned their right to such place only as they accord with the child's unfolding physical growth. If any physical exercise that you assign at any stage of the child's physical education does not accord with the period of physical growth that is rapidly unfolding at that time, it is wrong, it is harmful, it is a physical sin, and you know that ultimately it will provoke a physical abnormality.

Great as is the harm wrought to the body by training children in exercises that are ill adapted to their periods of physical growth, much greater is the injury wrought to the mind if the gymnastic exercises as well as the other employments of school life—such as the study of history, grammar and arithmetic—do not accord with the periods of mental growth. It is therefore obligatory upon you to know something of the conclusions of modern psychology with reference to these mental growth periods in order that you may make your system fit not only the child's rapidly growing body but also fit his unfolding mind. The close inter-action of mind and body is in no way more clearly evidenced than by the fact that you nor I have never seen a case of brain slovenliness or disorderliness that was not more or less benefited by physical training.

Evidence is available on this point from the comparison of a large number of pupils of schools with and without physical training. Physical training of the right sort, properly adapted to the child, tends to improve his brain condition, either preventing or removing disorderliness in motor and in mental action and promotes healthy activity in both connections. This is absolutely true

of children well made in body, as well as of those in some slight degree below normal. A case in point: You may have in your school a child whose mental processes are slow and limited, though fairly accurate. You ask him a question. His answer is slow in coming. You can best quicken the mental processes of such a child by quickening the interaction of his eye, ear and hand by games of competition, such as hand ball, baseball or tennis, where the action must be quick or failure result.

Physical culture is in most respects the most difficult subject of all the educational branches, especially when we are obliged, as most of us are, to adapt our teaching to large masses. Everything practically depends on the efficiency of the teacher. This important branch cannot be taught successfully by mere drill masters, ex-circus performers, or college athletes, but must be taught, if taught successfully, by those who have had especial preparation for such work. The time was when anybody who could swing dumb bells or had been on a college foot-ball team considered himself well qualified to teach physical culture, and many succeeded in getting places in the schools and thus began to maltreat children according to their individual ideas. Some of these still flourish and they are the creators of monstrosities not only in the form of maltreated children but also fake, hybrid, so-called systems of physical culture.

The teacher of gymnastics should be first and foremost a teacher. If possible he should be a graduate from a normal school of good repute or at least be familiar with the fundamental requirements of teaching in the elementary grades of our public schools and certainly should be well informed on the subject of general education.

The object of physical exercise in any class in physical training must be in large part to control this or that group of nerve centers in the brain, increasing in this manner the quickness, precision and associating of other activities together. As a result of this, with the proper range of physical activities, appealing to all the brain centers, a well organized system of physical education cannot help but result in a firm building of a healthy brain that will always act with integrity. Gymnastics well taught will stimulate the development of will power, of good mental habits, and a strong moral character, but that these various results may be best achieved requires a master mind as well as a master body. A trained gymnastic teacher is the only one to impart these principles and his training will have been onesided, fore-shortened, ineffectual, if he has not recognized in all of his self education the value of psychology in the preparation for a teacher of gymnastics.

## DISCUSSION.

Dr. Arnold—I am somewhat at a loss in discussing Dr. Krohn's paper. I think we can all agree upon the propositions he has put before us; they are all sound and healthy. Those who teach gymnastics in a normal school and undertake to prepare others to lead pupils in the art of moving with a view to the best physical training should be able to teach, not only what to do, but how to get the best results from it and the greatest amount of physical and mental benefit. Therefore, it requires movements that can be accurately designated in degree of force, swiftness or velocity in order to be adapted to the necessity of the occasion.

Primary to this we should be able to determine the difficulties of the operation of moving certain cords, of moving with certain velocity; and a study of this subject is not a study of the mechanism of the joints and muscles only. It brings us back to the faculties of the mind as a guide. A repetition of a movement cannot be obtained without a memory of that movement. A movement of which we feel the limits would satisfy the necessities of the case. We could not have a memory of a movement without it produced sensations that a child could record with precision so as to know with what sensation it begins; a degree of pressure of the artery, for instance, of the muscles or sensory nerve. A very slight movement will not produce sensations that a child can record accurately so as to be able to reproduce the movement. Therefore, in order to properly teach gymnastics we must know what degree of movement will bring about accurate sensations which can be registered on the sensory nerve cells with precision.

To some extent these movements can be ascertained by trying them time and time again, or by registering apparatus, but practical psychology will assist us in determining them with greater certainty. I don't know as I have worded this as I ought, but the thought is that without knowledge of psychological laws we would be without law as to how to grade our exercises in degree.

For instance, a right angle position even a small child can see with sufficient accuracy, and therefore will be able to reproduce it, also a straight line position over head, with some variation, when they would not be able to reproduce anything less than a right angle. If you give them for a new thought a half of a right angle they will not have an accurate movement except where we have a limit to the movement, which in one may be less than in another. Therefore it is difficult to acquire reproduction in gymnastic movements of slight angles unless they are limited. I have noticed in my attempts to direct very small children that they will not reproduce movements as I want them to.

I desire to call attention along these lines. The moving of one member is easier than moving of two members, because we can pay attention to one thing at a time better than to two. Much of this is based upon psychological laws.

I have been teaching gymnastics for twenty years, and in the beginning but very few of these things were known to anybody, because it is only within the last two decades that experimental psychology has put us in possession of these facts. The teaching of gymnastics, as far as myself and many others is concerned, dates back to a period before the time of psychology, and experiment was our guide.

Therefore it is necessary to-day that every school that prepares teachers of physical training should teach psychology as one study, and applied psychology as far as it is applied to the art of moving. No curriculum is complete without it. Normal schools have been teaching it, and more advancement is made in it as it goes on. Schools should rule out as inadequate teachers of children in physical training those who have not had training in psychology as applied to the art of moving as well as in gymnastics.

Mrs. Burton—I have been asked to discuss some paper this afternoon, and upon this of all papers, perhaps, I would most like to say something, because I feel so strongly the present need of psychology in preparing teachers of gymnastics. As I sat here I have thought that we are fortunate in having with us a man who has a reputation throughout the entire West, and I think in the East as well, Dr. Daniel Putnam. Though he is sitting near me, I have not asked him if I might make bold to ask that he be called upon. I would like very much if the chairman would call upon Dr. Putnam.

The Chairman—Dr. Putnam, we would much like to hear you.

Dr. Putnam—I am sorry my good friend said anything about me. I don't know much about psychology. Thirty years or so ago I thought I did, and the more I study it the more I feel I don't; consequently, I don't feel competent to discuss the subject. I would, however, like to ask a question or two, which is all right, I presume. It occurs to me to inquire whether a training in base-ball, for instance, which is in the same line discussed, is an essential and very important part of a physical education; whether it teaches very much to our pupils that you want to teach; is it a principle or a side issue?

Dr. Krohn—As long as you have cornered me, I will say it is very far reaching. I don't know of a boy within fifty miles of me who don't know how to play base-ball. I will say that while it is not a part of physical training it takes a vast place in a boy's training, whether you call it physical, mental or moral. I

do not think a boy is quite as brave or heroic who has not slipped to first base and stolen second.

Dr. Putnam—The people who lived before base-ball didn't have any of the advantages.

Dr. Krohn—They had town-ball and sock-ball, and very much of base-ball has grown out of them. It took more courage to be socked with a hard rubber ball than to slide to first base.

Dr. Putnam—I am of the opinion that base-ball has its place,—I will not say a word against that,—but it strikes me that base-ball is not the head and front, the center and circumference of a physical education. I would not want to put it in the front. I should not say that if my boy did not take to a foot-ball training he could not come into my house; I don't believe I would. I don't think the gentleman over there wanted to say that; I don't think that he had thought the matter over fully. In my judgment some boys better play base-ball and some not; there is a difference in people. I don't think all virtues are centered in one form. I remember some 30 or 40 years ago there was some plant for curing all diseases, and it was thought it would cure everything. Well, I sometimes think some modern things are of the same sort; they wont cure everything; base-ball wont cure everything. Base-ball wont make every boy courageous, nor will any other form of physical exercise; it is the influence of combined things that does it.

I agree with Dr. Krohn fully on the importance of psychology to a teacher of gymnastics or anything else. Psychology, so called, was called physiology, which would be just as well to-day; it would come nearer the truth. The old-fashioned psychology, upon which I was brought up, was not altogether worthless. It has been stigmatized a good deal, and it did not cover all the ground it covers to-day; but the new is a direct development out of the old; it is not a revolution in the proper sense of the term.

I want to ask a question of Dr. Krohn that I forgot; I suppose he is here to answer questions. It is as to where the use of the imagination comes in? Does a pupil to whom you desire to teach a particular movement imagine the steps in the accomplishment of that movement, or only the application of them,—a picture of the complete act, and does not the machinery work itself when he starts it with a good will?

For instance, take a pupil whom I want to teach to pronounce a word; suppose he can't pronounce the word unless he has a representation of that word; does he think at all of how he is going to put the muscles of his throat or how he is going to move his lungs, or how he is going to do that or this, or does he simply imagine the result he wants to reach and then set the machinery to work and will it to work itself? My impression is that much

that might possibly come under the head of the imagination would be rather in the way of the pupil than an advantage to him. Am I right, doctor?

Dr. Krohn—A child remembers the full result, but if he don't remember the steps he can't retrace them; or, if he has not felt the muscles or felt the articulation of the throat in the utterance of a word he can't start in and reach the result, as in pronouncing the word "A."

I had a recent case of aphasia where a blood clot had formed upon the brain of a man and he was not able to utter a word, and yet he could remember every word and could understand and write every word upon a slate. I had to trepan the skull, remove the button and wash away the bloodclot; a few days after that was done he was able to speak and use his muscles, but he could not have done so if he had not remembered the muscle clews.

I am not going to quarrel over the difference between the modern and the old introspective psychology. I think, as you say, that the new or modern psychology has developed out of the old; but what I am saying is that we are trying to find something larger than the point of a cambric needle whereby a child can understand these things.

Dr. Putnam—I agree with the doctor, but I don't see what a needle's point has to do to-day with psychology. It is very easy to ridicule a matter. I don't think Dr. Krohn and I would disagree upon that. What I mean is, you would lead a child to repeat a thing with its means of repetition, or partial means, and follow the machinery of the throat, etc.; as in the case of the pronunciation of a word, I don't think giving information of the position of the organs of the throat, and teaching that it requires certain things to be done is necessary. The ordinary pupil does not need these things; they would be in his way, so I would not depend upon picturing all the different steps. They have a will, and I would train the muscles to obey the will, and the will will do the rest.

So, without being very positive about it, I am of the impression that psychology, while of very great service when properly used, is a good deal in the way when not properly used; that is, if I were to think of all the psychological matters when I am teaching pupils. I want the subject in my heart; I would like myself and the teacher to become saturated with the truth of the subject; then when he comes before his class he simply pours out his theme, and thinks no more about the steps of it than I do after I have learned to walk. When I was a child I had to take steps with a good deal of pains, but now I walk without thinking anything about it. The best psychological teaching is to direct the child what to do and tell him to do it for himself; tell him what to accomplish and he will get it himself.



I think this is so, still I won't be very positive about it, because I was not prepared to discuss the question, and it was a little unkind to call me up, still I will excuse you.

Dr. Day—I came here this afternoon to listen, but I am certain my learned friend has shied a brick over this way; I would rather throw it back to some one younger. I made no reference to base-ball whatever; I spoke of foot-ball.

Dr. Putnam—I presume I made a mistake in the kind, but it don't matter.

Dr. Day—I speak of this matter as I have been interested personally in both these games; I have caught behind the bat, played second base and played end on a foot-ball team; and I say now that my boy would have to play foot-ball in preference to base-ball, and he would have to learn to fight also.

Dr. Putnam—I don't think that is one of the things a boy has to learn; I think he derives that naturally.

Dr. Day—He should learn to do it successfully.

Miss Love—Base-ball, learning to ride a bicycle, or any other trick of skill trains the brain and exercises the will and develops activity, all in precisely the same manner. Therein, it seems to me, lies the value of psychology; and is the vital thing to which they should direct their attention. That is the type of exercise we must give boys to make brave, moral men with ideals. We fall down in modern methods of education by having no patterns for the children. If we can make right conditions for a child he will surpass any pattern we have in mind for him, by reason of having all the experience of the race behind him, and will make a model of a man of which we have no conception.

Dr. Krohn—We don't have that kind of kids in Chicago.

Miss Love—Perhaps you don't give them the right kind of ideals. That is wherein our modern method of education is lacking; the pupils should have ideals towards which to train them.

There is a book recently published by Dr. Richard Maurice Bucke on Cosmic Consciousness. It is very hard for me to give an idea of what that is, for there is no conscious language, or no psychological language, and you know how hard it is to express psychological facts in physical nomenclature; but Dr. Bucke puts forth the idea that there are few men who have ideas as much higher than self-consciousness than self-consciousness is higher than semi-consciousness; and this higher development, which comes between the ages of thirty and forty, he calls cosmic consciousness, universal consciousness, or universal sense, or common sense, using the language in a universal way.

Dr. Bucke gives examples of persons of magnificent physique as an illustration, and perhaps there are one or two women in

the list that he gives containing perhaps fifty examples of those people who have attained this cosmic sense; and he gives as the reason why women have not obtained it is because their education has been limited by the old superstition, and even now men are trying to restrict women by restricting their opportunities generally.

Mrs. Tucker—Not out here in Michigan.

Miss Love—There is less of it through the West where they have gymnasiums for girls, but in the school where I teach they do not believe in the same physical development for girls as for boys. They seem to think that the work for men in the future requires more athletic training and that the girls are not going to do something.

Mrs. Tucker—In my own school in Cleveland, Ohio, we had a color rush the other day that so disgruntled a neighbor of mine that he made the statement that it was really almost as bad, if not worse, than such a thing among the boys. I find a prejudice against the gymnasium suit for women, and I presume many of you find it.

Dr. Krohn—That grows out of the co-education question. You will find at Wellesley they have had a gymnasium suit since the year one. The prejudice probably comes from the opponents to co-education.

Miss Love—The courage and mental attributes that are acquired in those different feats of skill and strength, and that one gets in games, is very evident, and are permanent qualities of the mind, and these qualities, both physical and mental, stand them in hand afterwards.

I heard it stated the other day that the brain had been developed one-twenty-fifth part of its capability. If that is so there is a wide field for research by physical psychologists.

I want to assent to what Dr. Krohn has said in regard to certain important periods in the child's life, and those periods should be provided for in the proper physical training. Of course his mental training gets the psychological advantages to-day, as the brain is the popular thing to be educated; therefore, all persons are subjects for mental training, and if those seasons are passed there is a part of the brain that will not be developed properly; hence it is very unfortunate to overlook those periods.

## THE PLACE OF PHYSICAL TRAINING IN EDUCATION.

L. H. JONES,

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I cannot claim to be a specialist in physical training. In fact, I presume that the honor of a place on your programme comes to me rather as a student of education in general, so that my point of view will more readily give relative values, rather than the specific ones that belong to the enthusiastic student of a specialty. I regret, too, that I cannot offer myself as an example of what physical education should do for the development of the individual. Notwithstanding the fact of the struggles of my later years, I have never been able to recover from certain distortions and deformities of the body brought about by my early drudgery on the farm. As a very small boy, young and small of my age, it was my duty to plow corn through many a long, hot, weary summer day, and the practice of looking forward and to the right of the plow to see the soil as it rolled off the plow in among the stalks of the hill of corn, till each hill of corn was "hilled up" just right, as we said, developed a crook in my neck and a stoop in the shoulders which it has been utterly impossible for me to recover from since I have been old enough to try to correct the defect. How deeply I have since regretted that I did not then have some friend who understood the dangers that lie in certain occupations persisted in too continuously and too long, especially with the very young.

I refer to this phase of the subject to enforce a view to which too little attention has been given, in my judgment, in the past, namely, the necessity of a process of physical training corrective of the deformities occasioned by the common occupations of life. Of course, the broader view of this leads out to the larger fact that modern life, with its division of labor and its social complexities, has introduced myriads of conditions which produce deformities, if not corrected by special education and training. Dr. Harris has called attention to the fact that occupations, as a rule, call into action but a small number of muscles compared with the total number in the body. But it seems to me that he has never laid sufficient stress upon the fact that these few muscles are called into action so constantly that they are deformed through too great activity quite as much as are the others through inactivity; and especially is this true with over-pressure too long continued upon young and growing bodies, and perhaps still more disastrous upon other portions of the body than upon the muscles themselves; as, for instance, young and growing bones, cartilages, etc., resulting in many of our most annoying and most harmful diseases, as curvature of the spine, or deformities of that

nature. It is common to accuse the school of being the cause incidentally of many of these deformities, and I am free to confess that I think there is danger that the rigid discipline of many schools leads to the maintaining of certain positions for too long periods. But the school is not the only or the greatest sinner in this regard.

However, in any more fundamental study of the problem, the place of physical training in our curriculum must grow out of a more thorough study of man as a human being, of the reciprocal relations of body and soul, and the physical education and training of each upon the other. I am one who thoroughly believes that the soul is of more consequence than the body, that the soul is immortal and is destined to progressions in self-development infinite in time and degree. But the soul of the human being, under certain conditions, builds itself a body as an instrument of self-development. In order that this body may thus serve as an instrument of self-development for the soul, it is necessary that certain very intimate relations be established between the two. These relations are many of them unexplainable by any knowledge now at our command, but certain well established facts are already well enough known to be of service, and these in many cases determine what is wise for us to do, perhaps quite as well as if we understood the real reason for these relationships. For instance, it is well understood that the power of the soul to learn attributes of objects in the external world is dependent on the normal condition of the so-called sense organs, parts of the body especially related to the soul in this function of knowledge. These things are so well understood that we have come to believe that physical education should seek to keep these organs in health from infancy, to and through adult life, and even in some degree seek to train these organs in expertness in their functions, which is really another way of saying teach the soul how best to use these organs after they have been brought into and kept in a state of health. But this service of the body for the soul is not limited to the sense organs, nor can these sense organs themselves act in the service of the soul without concurrent action of other portions of the body. This develops the necessity of training into a healthy condition all the organs of the body, and to certain dexterity of action for each. Besides all this, we have to deal with the very mysterious relationship of the soul and the body, by virtue of which many forms of disease of the body affect the moods, conditions and processes of the soul. This results in reducing the problems of physical education to two chief ones:

1. To develop and keep the body in a normal, healthy, perfect condition, that is, perfect so far as its type will allow.
2. To train to such dexterity in the service of the soul as may be reasonable and desirable.

The first involves such direction of the life power as shall serve right digestion, circulation, assimilation, secretions, etc., that is, as shall secure the fulfillment of the type, therefore a thoroughly healthy condition of the body.

The second involves the problem of a co-ordination of exercises in which the soul is taught to take fuller possession of the body as an instrument for its life development. In regard to reflex types of mind and body, I find myself in substantial accord with John Ruskin, though wishing to subtract somewhat perhaps from his dramatic and exaggerated form of statement. He says that "human nature, as its Creator made and maintains it, wherever his laws are observed, is entirely harmonious. No physical error can be more profound, nor moral error more dangerous than that involved in the monkish doctrine of the opposition of the body to the soul. No soul can be perfect in an imperfect body, no body perfect without a perfect soul." It is possible that this may be an exaggeration of the reflex influence of the soul and body. It nevertheless represents the general truth, namely, that while the body is an instrument of the soul, the two eventually grow into such complex relationship that together they make up human nature, and we may not deal with either without taking into our account the other. There may be for us a subsequent state of existence in which we shall have no need of a body—shall live as pure spirit—but here we are not spirits, but men and women. It is this complex nature of the human being that makes the question of physical education so difficult of solution. The modern teacher of physical education must be to all intents and purposes a physician, so far, at least, as the more general principles of the science of medicine are concerned. On the other hand, he must be a trained teacher, versed in the science and art of education, while still beyond this he must understand these occult relationships, and the influence of the body and mind on each other. We do not yet generally require so much of either the physician or the teacher. It is distinctly to the credit of the profession that in almost an incredibly short time since these requirements have been demanded so many capable and competent teachers of this important branch of work have responded to the call. But it is not for me to instruct you in matters of which you know vastly more than I. A few practical suggestions out of my long service in supervising educational work may not be out of place, especially as these may be made to bear somewhat on the relationship of physical education to other branches of study.

1. In my judgment, the teacher of physical training should, more than has been the custom in the past, give advice to pupils in regard to hygiene, food, sleep, rest and work, and do this in such connection with the daily instruction as to make it felt by the students as really important. Students sometimes get the notion

that all there is of physical education is the prescribed exercise, perhaps with dumb bells or wands, and that if they faithfully perform these exercises they may violate with impunity all regular laws of health. In fact, students are inclined to take the prescribed exercise because by this means they think they may become more reckless of their habits in other respects. Of all these reckless expenditures of energy common to the young in their thoughtlessness, none is more far-reaching for evil than the common practice of curtailing the hours of sleep. The young seem to rally easily from loss of sleep merely because the draft which nature draws in this case is not a sight draft. Sooner or later, however, it must be paid, often with highly compounded interest.

2. A considerable portion of the prescribed exercise we give in the form of games in which all can participate, and in which attention is given in response to interest developed under mild competition. Team work calls for self-control, and thus brings the will into action; but under interest in the game, the faculties act so harmoniously that the nervous strain is least and the beneficial results of the action greatest.

3. There should be rigid drill exercises in which absolute control should be sought and absolute exactness demanded. But this exercise should be treated distinctly as work, work of the severest sort, hard mental work as well as physical. It should not be superadded to school work that is already too exhausting.

4. None of these prescribed exercises should be mistaken for play. Real play is whimsical, freedom of mind and body, for which there is absolutely no substitute. Do not be led into the experiment of regulating the play of school children at recess. Play may be guided but not regulated. The most funereal exercises I have ever seen attempted by school children have been regulated plays. It may sometimes be necessary to guide children in their play, or to change the form of the play to conform to the conditions of the playground, or other circumstances, but one thing that should be strictly guarded against is the introduction of any formality into the play that shall take away its whimsical element. It is in this that lies especially the restful quality of play. Real play is in no sense to be confounded with the so-called play of the kindergarten. This is correct in its place, but different from real play.

In closing, I congratulate you as an association on the hopeful outlook for the cause to which you give such devoted service. With the proper education and training of the teacher of physical education, the last bar to its proper introduction into our school curriculum is being removed. I myself believe that the teacher of physical education is just as necessary as the teacher of other branches, and that he should have like opportunities and equal facilities for the proper prosecution of his work.

## PRESENT TENDENCIES IN PHYSICAL EXAMINATION.

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Tendencies are usually reactionary. Growth, development, all evolutionary changes proceed by waves. The present status of physical examination is that of initial recovery from wallowing in the trough of a wave and making for the next crest.

It is well to consider, first, the original character, next the reaction, and lastly the present tendency.

The common point of departure for the physical examination as connected with our subject is comparatively simple to state. The source and mainspring for all physical examination, aside from that of the private medical practitioner, twenty-five to forty years ago, was, on the theoretical side, anthropological; on the applied side, developmental. The emphasis was upon the measurements first, personal history next, and physical diagnosis last. The measurements and facts of personal history in use during that period were brought into some permanent form and became crystallized in the report of the Committee on Statistics of this Association in 1885.

This achievement was due largely to the unbounded faith, the able direction and generous efforts of the men who constituted this committee. The leader and inspiration of this movement, as most of you are aware, is on the programme to-day with a new and progressive idea, after these many years, still spending himself for our common cause.

To the activity of this committee sixteen years ago we owe largely whatever of uniformity exists in method of taking physical measurements to-day. This movement marks also the first important attempt to unify upon any one line of work the efforts of all members of the Association, the first steps toward a thoroughly organized system of co-operation, a co-operation which should obtain throughout every phase of the professional activity of the members of this Association. For the development of such a unification of purpose and distribution of labor this Association must stand, or else perish from lack of purposeful function.

The original character of the physical examination was clearly defined. Its definite form dates from an epoch making event, the work of the Statistical Committee, which resulted in the re-

port of 1885. The original character of physical examination is indicated by this historical document. It is therefore, as was said above, comparatively simple to point out.

But there has not been one *simple reaction* or one *simple tendency*, for there has been a growing difference of point of view for physical examinations, and the examinations themselves have not therefore been one of common character. Point of view has determined the reaction. The general line of cleavage in point of view was foreshadowed, long before any change took place in the form of examination itself, by the theoretical, the scientific attitude of the anthropologist and the practical utilitarian attitude of the physical director who then stood for the developmental measurements and for the correction, through developmental forms of exercise, of the conditions revealed by the measurements.

#### THE GENERAL PHYSICAL EXAMINATION.

The general physical examination of the scientist taken for statistical purposes was first anthropological, contemplating the establishment of certain norms or types of development, the calculation of the limits of normal variability, the definition of the laws of growth and development, the demonstration of evolutionary changes in the race due to heredity and environment.

The next prevailing point of view in the general physical examination has been the medical. The orthopedic physician has been deeply interested in all postural defects and structural deformities, congenital, or acquired through the school desk or other causes, and he has stood for the determination of these defects by physical examination, and for the correction of them by mechanical appliances and by passive and active exercise. The progressive physician and student of hygiene has interested himself in the ventilation, heating, sanitary plumbing, general construction and equipment of school buildings, and in the limitation of the spread of contagious diseases, with the belief that through these means many of the above common physical defects in children will be eliminated, and much good has resulted. The oculist and aurist have naturally emphasized the need for eye and ear examination, and with the most satisfactory results to children, teachers and themselves. They have, by removal of a simple mechanical difficulty, thrown light on many a pupil's real mental ability, improved the health of the child and changed the whole attitude of the teacher from mere tolerance for an apparently refractory and stupid pupil to that of sympathetic helpfulness.

In this investigation the oculists and aurists have received very



cordial support and co-operation from psychologists and neurologists, another class of scientists who are of late displaying a deep interest in physical examinations. They have stood for the investigation of sensory and motor function. They have employed all forms of psycho-physical tests. They have been interested in the adaptation of exercise to the nascent periods, in nerve signs, so-called, in defectives and in precocious children, and in the physiological ground of mental deficiencies, in the food, rest, physical exercise and environment of the child, in fact, in all the conditions which belong to the subjects of personal hygiene and natural hygiene.

The physiologist has been investigating, also, the growth of the vital organs, their size and function. He has been able to apply more or less satisfactory mechanical tests for the respiratory function, and very lately also for the circulatory function, and results are being derived which have some permanent value from the point of view of the physical diagnosis of organic condition.

Estimated according to *point of view*, the tendency of the *general physical examination* has been from the determination of the normal toward the determination of the abnormal, from the anthropological toward medical and psychical pathology.

Estimated according to emphasis of component parts, the tendency has been from the emphasis of measurements and personal history toward the emphasis of that class of observations which form the basis for correct physical diagnosis.

Estimated according to the application of results the trend has been from the purely scientific toward the utilitarian, from the determination of general types of development toward the grasp of pathological conditions and of the underlying causes which produce these conditions.

Treating the matter of tendency statistically, taking the whole field of physical training, and using the Proceedings of the A. A. A. P. E. for the first eleven years of its history, from 1885 to 1895 as the basis, the results, according to Mr. Pierce's list of important articles, are found to be as follows:

History of Physical Training.....4 Articles.

Various forms of Physical Training (practical work) 45 articles, subdivided as follows:

Military Drill .....	9 Articles.
Athletics .....	12 "
German Gymnastics .....	10 "
Swedish Gymnastics .....	7 "
General Gymnastics .....	7 "

Leading articles based on the work of the examining-room, 61  
Articles, sub-divided as follows:

Psychology .....	7	Articles.
Physiology .....	7	"
Hygiene .....	16	"
Anthropometry .....	31	"

As many articles upon anthropometry as upon all the rest of the lines put together.

Taking the PHYSICAL EDUCATION REVIEW as a basis and classifying the articles for the past seven years, 1896 to 1902, as nearly as possible on the same basis, but placing a few articles with more than one point of view under as many heads, we find approximately:

History of Physical Training.....	9	Articles.
General Articles in addition to Presidents' Addresses .....	16	"
Various forms of Physical Training (practical work) ..	25	"

Sub-divided as follows:

Military Drill. ....	2
Athletics. ....	7
Play and Games.....	8
Various systems of Gymnastics .....	8

Gymnastic Pedagogy and General Pedagogy 21 Articles.

Articles based largely on the work of the Examining room .....	93	"
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Sub-divided as follows:

Psychology .....	23
Physiology .....	20
Hygiene .....	21
Orthopedics .....	10
Anthropometry ....	19

Of this last group at least six articles presented also psychophysical aspects as well as the anthropometric aspect of the subject in hand.

The very fact that many of these papers were difficult to classify under a single head because of the general scope of the treatment, presents another striking evidence of progress. It marks

the rapidity with which the proper correlation of the various points of view for the study of function in the human body is growing year by year.

These figures do not pretend to be absolute in any sense for individual point of view must, to some extent, determine the classification, but they indicate somewhat the change of emphasis of the past few years from systems of exercise to the scientific basis for it, from anthropology to medical and psychical pathology, from the theoretical in anthropometry toward the practical. Such a numerical estimate is not of final value again, because tendency cannot be determined by a mere number of papers, but by their influence.

The influence of the statistical examination upon the special examination for individuals is self-evident. The conclusions derived from this general examination for statistical purposes have changed widely the point of view of physical directors. These conclusions have reacted upon the examination of the individual, have helped to create dissatisfaction with certain kinds of measurements, mainly muscle and bone girths, have shown the superiority of certain other tests, in short, have helped to raise the whole question of relative value of measurements, of strength tests, of items of personal history, and of physical diagnosis. This is exactly as it should be. The conclusions of the scientist should point the way for a change of methods, machinery and expenditure of energy. The general examination for statistical purposes ought thus to modify the individual examination decade by decade until our system is perfected. The inevitable result of careful observation must be revision.

#### THE SPECIAL PHYSICAL EXAMINATION FOR THE INDIVIDUAL.

This form of examination was originally of the same general character as the general statistical examination. As has been said above, it became crystallized in a permanent form through the work of the Statistical Committee in 1885. It has changed with change of point of view for its use.

The changes in point of view, method and condition have been due, to some extent, to influences from without, to conclusions derived from the statistical examination, but more largely to influences from within which have grown up through use, in connection with the attempt to adapt exercise to the individual, through the use of measurements.

## I. METHODS AND EQUIPMENT.

The original form of this examination involved taking fifty or more measurements. A book was used containing these measurements, the personal history and the physical diagnosis on one page. The measurements taken were plotted on a general percentile table and given to the individual. Any prescription of exercise, if made, was usually given on a separate blank.

The changes in method which have come about are largely through the necessity for the study of economy of time and energy of the director, *e.g.*, the personal history blank is now printed by many in card form, is handed to the men to be examined as both the appointment and personal history blank. It is filled out before the examination and brought to the director, thus saving ten minutes or more of his time for each individual measured.

The anthropometric table now often contains, in addition to the measurements plotted on it, some directions as to health, special notice of defects, and a prescription of exercise. In quite a number of institutions the place of the simple anthropometric table is supplied by a physical department manual containing an anthropometric table of reduced size, and all the necessary helps to the individual mentioned above, with some additional ones. The latter are largely in the nature of hints as to the method of developing various parts of the body.

By others the measurements and physical diagnosis are printed on one card for convenience in filing. On another card of the same size is recorded the personal history. This places all information as to the individual on two cards, which may be filed in drawers side by side alphabetically, or one of them may be filed by numbers for cross reference.

The Library Bureau have given the final crowning touch to all this convenience and helpfulness (at least in case of my own card system) by providing a special filing cabinet for all blanks used in the physical examination.

There has been in the last fifteen years a wave of experiment with expensive and technical strength machines. It has not yet passed, but is evidently passing. Two things are largely responsible for this, necessity for economy in use of time and of money. The results obtained from the use of extensive strength tests have not usually paid for the energy expended.

One tendency appears to run through this whole survey of method, pressure for time has enforced study of convenience. The general trend is toward a card system and toward compactness and brevity in blanks.

## 2. ORIGINAL CHARACTER.

The *Original Character* of the examination for the individual was developmental. Measurements and items of personal history were extensive. All dimensions of the man were taken—bone lengths, breadths, depths, bone girths, muscle girths and strength tests. Symmetry was taken to be the index of function, not simply of muscular function, but of organic function. Prescription of exercise depended principally upon muscle girths as compared with the height. Correct the outside and the inside will take care of itself. The exercise prescribed was principally localized and formal gymnastics.

The *reaction* from this scheme of work appears to have come through these principal causes, lack of time, and failure to get consistent and satisfactory results. Men in various parts of the country, discouraged apparently by the length of this original form of examination, have dropped any form of measurement. Others say that the men measured are disappointed in that they do not gain in girths. Other directors have noted that men may be developed to some degree of muscular symmetry by the localizing methods of exercise prescribed, but that they have not the staying power when placed alongside of men less symmetrical but brought up on hard work and country sports.

In taking a long list of measurements, many of which are of indifferent practical value to the average physical director, the tendency is to lose sight of the few which have a definite value in estimating organic vigor, in making physical diagnosis.

The least valuable measurements from this point of view appear to be bone lengths and bone girths, about ten altogether. The Young Men's Christian Association Gymnasias have discarded these very largely. Of the half dozen heights taken, only total height and sitting height or trunk length are valuable. Muscle girths have been retained very largely by all directors who use measurements. This has been due principally to past education in point of view. The education of popular interest in symmetry and size for the past twenty-five or more years through this whole developmental scheme, has established a conception of physical training which is practically identical with this scheme. To a very large percentage of pedagogues and psychologists, not excepting our great leader, Dr. Harris, physical training stands for formal gymnastics; for corrective work and educational work. Hence their strong plea for reversion to the natural forms of rest and recreation of the playground, in order that organic vigor may be secured. They do not necessarily minimize the psychological value of corrective gymnastics nor the hygienic value of corrective gymnastics, but they have not apparently estimated the deep and growing interest in and attention

toward promotion of health, as the first aim in physical training, on the part of adherents to all systems of gymnastics, nor have they observed that there is a rapidly forming system of hygienic gymnastics, empirical and eclectic, which will, without doubt, ultimately meet more nearly the demands presented by density of population.

The past education of the popular mind in this emphasis of formal gymnastics, in this general conception of physical training is evinced by the fact of the great prosperity of the various developmental schemes of the correspondence schools of physical culture. The flag of "muscular symmetry" floats serenely over most of their strongholds for the principal reason that the growing men of our profession are too busy devising something better to "shoot it full of holes." Muscle girths have been preserved also by the fact that all the anthropometric tables in use are made up largely of girths. To discard the girths would make it necessary to discard these tables, a process suicidal to the interest of the gymnasium members. It is the part of wisdom to hold fast to these until something better has been provided.

Strength tests are regarded as a better index of muscular function than girths. They have not come into more popular use apparently because of the expensiveness of apparatus employed, and of the comparatively larger amount of time required to take these tests. Strength tests indicate a great increase in function often when there is no increase in muscular girth, when there may be even a distinct loss in size, but when there has been a decided increase in strength of tissue and in neural control.

A valid objection is made against the use of strength tests that they often do not, because of their vigorous character, afford a correct estimate of the weaker men, and that through carelessness of observers, weaker men are sometimes strained, perhaps permanently injured. In visiting one of our leading sanitariums it was my fortune to see an incoming patient so strained by the back lift. On the whole we cannot afford to discard the careful use of strength test machines as an index of muscular function until something better is provided. We entertain the hope that an advance will be made in this direction through the papers on today's programme.

Height, weight and trunk dimensions, tests of organic function and of muscular function, form the essentials of the anthropometric side of a physical examination. Breadth, depth and length of trunk are a rough index of vital capacity. Lung capacity and chest expansion are an index of respiratory function. They afford to the physical director some indication of organic vigor. As a preparation for the emphasis of hygienic forms of exercise it is well to emphasize the hygienic form of measurement.

## 3. TENDENCIES.

Of the tendencies of physical examination in the different fields it would ill become me to speak at length when you have on the programme to-day specialists in these fields who are appointed for that specific purpose. But my general impression of those different fields stated in a comparative way, as I have obtained it from responsible men, is that among colleges there is a growing demand for cutting out several bone lengths, bone girths, some muscular girths, and perhaps strength tests. This applies to preparatory schools as well.

Among Young Men's Christian Associations there are two tendencies which have appeared lately, first, to drop all measurements and depend on physical diagnosis or on nothing; and secondly employ measurements which are an index of organic vigor, and to employ those which are of most value in the determination of organic vigor. As the representative men in leading cities are committed to this latter reform, the probabilities are that they will prevail over the negative and indifferent attitude of the remainder. At the next biennial Physical Directors' Conference of Young Men's Christian Associations at Lakewood, in June, this matter of revision of schedule of measurements will be fully discussed.

In normal schools there is a growing tendency along the same lines as was indicated for the colleges and preparatory schools, but in two or three leading schools the same brief list of vital measurements has been adopted which is being used in leading associations.

In public schools new tendencies take two directions, to employ measurements which are an index of organic vigor, and to introduce those sensory and motor tests which are of interest to psychologists. These two tendencies do not need to conflict, and to my knowledge have not done so. At my instance one scheme including both lines of examination has been very lately introduced into the practice school belonging to one of our reputable State Normal Schools.

In all these different fields there are indications of a growing tendency away from the older point of view of taking measurements primarily for the advantage of the scientist, and toward the use of lists which will form the basis for physical diagnosis and which are primarily for the advantage of the physical director.

There is one further step to take, the provision of measurements which are primarily for the advantage and information of the individual examined.

When anthropometric tables have been provided for vital meas-

urements, which show accurately the typical development of the persons of the same class to which the individual belongs, and therefore give some information as to the development which it is possible for him to attain, the other half of this problem will have been solved.

Estimated according to *point of view*, the trend of the physical examination of the individual has been from anthropological toward physiological and hygienic.

Estimated according to *emphasis of component parts*, the trend has been from the emphasis of measurements and personal history toward the emphasis of vital measurements, which form a basis for diagnosis of organic vigor.

Estimated according to *application of results*, the tendency has been from the purpose of informing the expert, toward that of educating the average physical director and the individual examined.

After several years of personal effort in the direction of the solution of this problem of the application of results to the director and to the man measured, the way is found only to be blazed for real work. The appointment of a special Committee on Revision of the physical examination by the Society of College Gymnasium Directors at their last meeting and my own appointment as president of this Section of Anthropometry suggested the devotion of this meeting to the discussion of revision. The declared purpose of this meeting is revision. The outcome of this session ought to be the instruction of a Committee on Revision of the Physical Examination to bring in a schedule of measurements and tests upon which all different interests can combine, and, if they see fit, to recommend also certain grouping of additional desirable measurements and tests for colleges, preparatory schools, public schools and for the Young Men's Christian Associations.

If this demand for revision were simply an individual or a sectional matter, it would be the plain duty of this body to ignore it. But a Committee was appointed at the last meeting of the American Association for the Advancement of Science by the psychological, physiological and anthropological sections of this society to co-operate with our Association and to offer suggestions as to the anthropometric data which might be taken by members of our Association. This Committee consists of Prof. J. McKeen Cattell, Prof. W. T. Porter and Prof. Franz Boas. We can do no less than meet the proffer of such co-operation with definite and favorable action.



## PHYSICAL TRAINING CORRELATED WITH OTHER SUBJECTS OF THE SCHOOL CURRICULUM.<sup>1</sup>

ADA F. THAYER.

CORRELATION expresses the idea of inter-connection between studies. McMurray says: "What is learned in one study is learned for the purpose of applying it to all other studies. A fact, however important in itself, if learned without reference to other facts is soon forgotten. Knowledge is power only when it can be turned to use under the conditions and pressure of life's experiences."

The application of these teachings to public school work, by means of which the physical training becomes an integral part of the entire system, and not an ornamental branch tacked on at a tangent—is the problem presenting itself to every director of elementary schools to-day.

SINGING.—Considering first, the subject of singing, we find the physical training a most valuable aid in establishing correct posture and in the practice of slow, deep breathing, enabling the child more easily to control the breath, and its emission as pure tone. The rhythm of running, marching, hippety-hopping and of many exercises establishes another link between physical training and music, and in a majority of cases a deficiency in the musical sense is apparent in a failure to keep "step" and "time." Music is brought into requisition and the child taught to coördinate the step with the accented note. In a reciprocal sense the muscular act tends to make the child more sensitive to the music. In our eighth year our Delsarte exercises are accompanied by music.

DRAWING.—Drawing directors testify that physical training enables pupils to hold positions for pose drawings more steadily and for a longer period, and that the development of back, chest and arm muscles gives greater freedom and efficiency in drawing.

Throughout the grades we use freely the straight line sketches to illustrate our gymnastic position. Perhaps the drawing directors would not consider them the acme of good art, but they are very effective in impressing the right idea upon the child's mind, and they make them conscious of the value of drawing in expressing thought.

In some cases one row of children will pass to blackboard, each child making a sketch of the exercise to be executed. In other cases the child places the sketches at the foot of his spelling or arithmetic paper.

GEOGRAPHY.—In the 4-2 grade geography, Indians as a race are studied. The drawing is correlated by teaching the making

of wigwams, afterwards decorating them with water colors; and of bows and arrows. The supplementary reading continues the subject. The child's imagination is stirred by the primitive life, and it is very easy to gain excellent posture, and strong, vigorous action in difficult movements by playing Indians. In "Left foot sideways forward—place! Right arm hip firm, left arm upward—stretch! Trunk backward—bend!" we play, that the Indian, with his bow and arrow, is trying to shoot a bird in the tree above, and looking upward to see if his aim has been true.

Also in the fourth year, the natural forms of the United States are taught—lakes, rivers, mountains—and the States. We correlate by utilizing a bean bag game. The teacher states the initial letter of a mountain and tosses the bag to a child. The child catches the bag, stands, names the mountain, and in turn states another letter, tosses the bag to second child—and so the game continues.

In the fifth year we teach the largest cities of the world with their products, or characteristics, by use of the same game, and also by the game of "Spin the Cover."

Physically we gain a change of posture, tending to lessen fatigue and to increase the breathing. This motor activity added to the mental excitement acts as a tonic, a resistant to fatigue and a stimulus to mental effort in other directions.

**ARITHMETIC.**—In the fourth and fifth year grades we employ this same bean bag game to develop alertness in rapid addition, multiplication, division and subtraction. The teacher propounds a short problem and tosses a bag to the child. It affords a most excellent training in quick thought.

I believe that the concentration of thought induced by the demand for quick reaction in our response counting develops attention and quick thought, and therefore is a primary factor in arithmetical growth. the "re-action" time implies an instant's pause between the command of the will to the nerve and the response of the nerve stimulating the muscle to act. Throughout the grades we allow for this re-action time by giving the commands unexpectedly.

**HISTORY** presents a fascinating field for correlation. Reading to familiarize the children with Greek and Roman games, used in connection with the blue prints of famous statues, is the most we have attempted in this line. Syracuse has accomplished much in the way of school room decoration, and in many of the older grades we have excellent casts of "The Wrestlers," and the "David," "Victory" and the "Flying Mercury." The children are much interested in the muscular development and curious to know the exercises most favorable to the development of certain muscles.

In the sixth and seventh grades I have advised the children to read stories of the Greek and Roman heroes. Baldwin's "A Story of the Golden Age," "Tales of Ancient Greece," by G. W. Cox, and "The Heroes," by C. Kingsley. I believe this to be, as yet, an almost unworked field.

**WASHINGTON'S BIRTHDAY.**—During the week of February twenty-second the "courtesy" is introduced in the gymnastic lesson, and the teacher tells of the stately minuet danced in Washington's time. We are constantly striving to dovetail physical training with outside knowledge. On Memorial Day we plan arm stretches, accompanied by the whistling and singing of patriotic songs. We believe interest induces attention, and the attention demanded by physical training produces in the child the pleasure that always arises from deliberately overcoming difficulties.

**ULTIMATE END OF EDUCATION** is character building. The children forget the theories taught to-day. Information changes as the years roll on, but if you create in the child the love of knowledge and how to gather it for himself; quick observation and a moral strength, the end has been gained.

So in physical training. I am not striving to teach a certain number of exercises the child will forget as soon as he leaves school, but to make the anatomical structure and physiological functions normal, to teach him the value of physical training, and he will practice by himself by and by—I am endeavoring to make him courageous and ready for emergencies. Do you remember Dr. Nicholas Murray Butler's definition of culture? "No man is really cultured until he can do as well as think."

Henderson tells us: "The real work of education ought to be the cultivation of the will to do." Physical directors ought to drive this nail home hard. Physical training not only ought to build a body sturdy enough to resist mental and moral fatigue, but it ought to inspire in the individual an unquenchable desire for motor activity in the right direction.

## THE VALUE OF COMPETITIVE GYMNASTICS.

BARONESS ROSE POSSE,

Director Posse Gymnasium, Boston, Mass.

The idea of competition may be viewed in three aspects. One may compete with another, one may compete as a part of a body against another body or one may compete with himself. The last constitutes true gymnastics. The others are generally considered under the head of games and sports.

All normal children should be required to take systematic physical training from the time they leave the kindergarten until they receive their college diploma. During all this time there should be a judicious use of games. After the children have had the proper exercises for their health and development, they may be given a game as a dessert, since the effects of most games are general rather than special. However, small children should be given competitive work with great discretion. The moral effect on a child is bad, if he gets the idea of excelling in a game in order to be superior to his playmates. The idea of "getting ahead" leads to selfishness.

There is a tendency among growing boys and girls to decry or undervalue the real work of gymnastics and to overvalue the importance of games and sports. It is natural to like games. It is a race-memory. Probably the children of Adam and Eve originated many of the games that are played in other forms by the little ones of to-day. Unfortunately, children often find the sort of work that is necessary to improve their frail bodies quite slow—certainly not at all exciting. A prominent English educator has lately said: "There is a tendency in education at present, more especially with regard to modern subjects, to render the process interesting, as it is usually called, but amusing would probably be the more correct word. It would be absurd to recommend that any subject should be presented in a purposely repulsive form to the students, especially to youth, but on the other hand, it seems to one a most enervating practice to shrink from demanding even irksome attention whenever it is necessary. The lesson that success in any pursuit demands serious toil must be learned eventually, and like most lessons, is learned with least pain in early years." In making an application of this to the subject of physical training, while we may not agree with all of it, we must acknowledge that there is much good sense in it.

We hear it said that the foot-ball matches, the rowing-matches, etc., keep gymnastics alive; that if the interest in such contests were to subside, the gymnasiums would lack patronage. It is the ambition of all the small boys to grow to be like the foot-ball giants. But, perhaps if there were less importance attached to the cultivation of the sport spirit, there would be more attention paid to the actual needs of the body and the proper care for its preservation and improvement. So much prominence is given to athletics in the newspapers that young persons who really need gymnastics feel it beneath their notice to work in the gymnasium unless they are "training" for some athletic event.

It is a question whether an individual should be educated mainly for his own benefit or for that of others. If a child shows a decided predilection for any particular line of work, and he is encouraged to indulge his tastes, he will become a specialist, and if he is a genius, he will contribute much to the comfort and pleasure of the world. But is this fair to him? Is it not hurtful to allow him to continue his studies to one end, exercising only those energies which have been abundantly developed and leaving others dormant which should not be neglected? Would it not be better for the genius to be a lesser artist and a broader man? Does the genius live as much as his fellows who enjoy a little of everything? The world is selfish, and accepts all that genius can give with scant thought for the giver. Generally the man or woman who devotes life exclusively to one pursuit or profession becomes narrow and unbalanced. Those who enter the gymnasium should be trained most thoroughly in that, for which they have no natural aptitude, in order that they may derive the greatest benefit morally and physically. Yet those who train for competitive events are apt to neglect everything else, to spend hours each day for many weeks before the contest in practising one form of exercise. It may be the very thing that they should not practise. It will enable them to excel in that particular kind of movement, but it is almost sure to produce a one-sided or over-development which should detract from their value as representative gymnasts; for such men should be not only harmoniously developed, but in after-life they should continue perfectly strong and healthy in every part.

The requirements for taking part in competitive events should include the following:

1. No one should be allowed to enter unless qualified to take part in every event on the list.
2. In preparing for the contest, the gymnast should have received a systematic all-round training, with particular reference to the strengthening of the heart and lungs.
3. No one should be declared eligible by the trainers who

had not successfully accomplished without great loss of strength or promotion of abnormal conditions a trial-test similar to the one required.

4. There should be a standard of form for every event.

5. No contestant should appear who did not present a good appearance. Stooping shoulders, flat chest, or any over or under development should debar from the contest. Thus, at the start, the athletes would command admiration and respect, not so much for themselves as for their method of training. The work of the athletes could be thoroughly enjoyed, because, since they had attained such physical culture, one could be sure that they were in a condition to stand even a heavy strain without injury.

6. In the preparation for athletic contests, the trainer should see to it that each player who presented evidences of weariness should stop play. It would lead players to husband their strength that they might last longer in the game.

The inevitable result of these restrictions would be that athletes would endeavor to acquire the highest type of perfection and their training would benefit their whole lives.

The training methods that formerly obtained were not productive of good results. I was recently discussing this subject with a Harvard graduate who was captain and stroke of his 'varsity crew. He informed me that he was the sole survivor, all the rest of the famous team having succumbed to some form of heart complaint. It is not uncommon to hear that nearly every man on a foot-ball team has received serious injury which will go with him through life.

Granting all the importance that popular enthusiasm gives to athletic sports as a means of cultivating courage, class spirit, quickness, presence of mind, etc., the fact still remains that these qualities may be called forth by other forms of training, without the accompaniment of broken bones, bruised bodies, disfigured countenances and deformities. The body should be beautiful, and whatever mars or prevents the development of beauty should be discountenanced by those whose profession it is to prescribe for the body. If the mass of the people are to be interested in gymnastics we must not prejudice them by showing them unpleasant things. The timid man would be justified in shrinking from undertaking a course of gymnastics, as exemplified by the work shown in some gymnastic exhibitions. It is not edifying to see an ill-shapen man come tottering in from a long run to drop exhausted on the ground there to lie gasping, while all the blood deserts his ghastly face. The spectator experiences a strong feeling of repulsion for the man and for what has produced such a loathsome spectacle. To train a man who shows ability for high jumping to perfect himself still further in this direction is un-

wise, for it is almost sure to make him unevenly developed both in body and mind. Yet those who wish to create "records" as their prime idea of the acme of physical education would delight in making this development as one-sided as possible. When gymnastics produce faults, they defeat their object. Too much vaulting is apt to produce a flat chest. Too much running, bicycling and the like produce clumsiness of gait, due to overdeveloped leg-muscles. Men overtrain when they continue to exert themselves after the effort is a weariness, or worse still, a pain. If gymnasts could be trained to do remarkable feats without showing extraordinary signs of fatigue, a great part of the objection to competitions would be removed.

In all competitive gymnastics, it has been said, there is danger of overdoing. Under the excitement of the moment the contestant is unconscious of the strain he is undergoing. He makes just one more effort, and starts the little break in the blood-vessel that later may cause his death.

It is not fitting for a layman to discuss technical subjects, but it is well known that excessive fatigue will produce intermittent action of the heart, which is a persistent alteration of its natural rhythm. If the exciting cause be a powerful one, even the strongest heart will hardly escape. Injury to the mechanism of the heart may be brought about in two ways: first, by injury to the valves; second, by weakening of the cardiac muscle, and this latter may itself result in valvular imperfection, but one which at first is of a curable character. The disease which generally produces incurable valvular deformity is endocarditis,—inflammation of the lining membrane of the heart. While this is ordinarily produced by acute articular rheumatism, it is reported as having often originated in immoderate muscular exertion.

It is also repeatedly asserted that severe physical exertion must be considered in the etiology of aneurism of the aorta, which is nearly always fatal. The most common form of diseased heart induced by overdoing is hypertrophy, or enlarged heart; then the enlarged cardiac muscle is apt to undergo retrograde changes which may be fatal to the patient. When the increased effort is made on the hypertrophied muscles, and this effort is produced by the overzeal of a game, then the heart no longer responds to the increased demand made upon it, and it gradually becomes paralyzed and insufficient. This condition may also be found in laborers who perform unusually heavy tasks, as blacksmiths, porters, etc.

All affections of the heart, whether curable or incurable, which arise from debility of the cardiac muscle ultimately resolve themselves into what may be termed a heart-strain. Is the injudicious athlete incurring the risk of creating such a condition for any

great or worthy cause? Is he running a race to save a life or to do good to any human being? Or is he merely making a record for his own or his institute's aggrandizement?

Doubtless it creates an interest in gymnastics to have athletic competitions, but I would prefer less interest in the form it now takes and more genuine regard from the thoughtful and the educated. There is a science of physical training, and it has for its object something over and above the coaching of men and women to match each other in throwing hammers or jumping over obstacles. The leaders of the physical education movement have been slowly reaching out in the direction of the psychological effects of exercise. Here is a tempting field for experiment. There is a pressing need of college graduates in the gymnastic profession. Until a greater number of educated men and women are engaged in this work there will be comparatively little accomplished in the way of original research by which a profession advances. Enthusiasts in other branches of science spend their lives in studying for the advancement of some particular theory.

Physical training, to my mind, is the grandest thing in the world, because it should underlie every other form of education. The more I investigate it the more I believe in it and the more anxious I become to have the great majority of people value it as I do. The masses will never consider physical training as a science as long as we place it before them merely in the light of amusement. The profession the most closely allied to that of physical training is medicine. That which has always excited my admiration for the representatives of that profession, equally with my appreciation of their skill and unselfishness, is their feeling for the dignity of their work. A layman cannot fail to be impressed with the solemnity and responsibility of it, merely from considering the attitude maintained by physicians towards their profession and towards each other. I would have physical trainers regard their work in a similar way. I would have them feel as much responsibility in caring for their pupils as doctors for their patients or ministers for the welfare of souls. The work of upbuilding the body seems to me sacred. I cannot see why the profession of preventing disease is not as valuable and dignified as that of curing disease.

The more one knows of the human body, the more one studies its wonderful mechanism, the more reason he has for reverencing it. We surely ought not to degrade the body by treating it with no more consideration than the London coster shows his donkey, driving it to exhaustion and using it up without regret, while a thoughtless crowd looks on and smiles. It is like using a wonderful invention like the phonograph for the performance of a music-hall song, which the public pays a penny to hear.



While we continue to propagate the idea that gymnastics is a good thing to have fun with we shall find it hard to get a serious consideration of it. I do not believe in abolishing games and sports. I do not believe it is wrong for contestants under certain conditions to establish new records. But I do believe that all these things are entirely wrong when presented to the public as a form of entertainment or as a means of making money.

I think it is time that gymnastics occupied a higher position among the professions. In order to raise the standard we must efface the popular impression that all gymnastic training tends to athleticism—that the experiment of physical training shall be dropped if the child seems to be weak. Gymnastics are primarily for the weak because the strong will work out their development unaided—they merely need guidance. The public should be led to see that he who has had gymnastic training has improved his disposition, has lost his bad temper, has gained presence of mind, has become thoughtful of others, has begun to question whether the opinion of others is not at least as good as his own. Such an one will wish to have his neighbor derive the same benefits that he himself has obtained; he will use his influence to induce some one else to improve his bodily condition, and so he becomes of real use to mankind. Is not that more praiseworthy than winning a Marathon race—and perhaps afterward dying of heart complaint?

We surely need not go back to the much-quoted Greeks for inspiration for our gymnastic sports. Surely the world need not confess that in all these years there has been nothing learned in the realm of gymnastics, nothing new attained. If in the days of Homer and Virgil the people glorified the athletic games and looked upon them as the great event of the year, it was because the people lived for pleasure, and the games gave them the most amusement. The instinct of blood-thirstiness was strong in those days. It is a race instinct that will probably never be wholly eradicated. Women have progressed more than men since the days of turned-down thumbs.

Women who have any measure of influence and who are concerned for the welfare of gymnastics should use their influence against sports or competitive events that tend toward overdevelopment, overexertion, brutality of any sort, selfishness, greed, dishonesty, vanity, self-consciousness, envy, jealousy, pride, self-conceit, boasting, or any form of narrowness. Generations to come may be trained to such a state of physical perfection that we may have all the excitement, the fun, the enthusiasm, the patriotism, that now accompany a great contest, without any of the bad taste in the mouth afterwards. But we have not reached that stage just yet.

The expressions seen in photographs of football players can not be wholly superficial. The thoughts and actions of our daily lives are impressed on our faces. War, whether real or mimic, produces a roughening if not brutalizing effect on the fighters. It is not according to progressive ideas to train men for months and years to enable them to reach a condition whereby they may fight with and subdue their fellows. Their training should rather enable them to help their weaker brethren. The strong man should exult in his strength, not because he is stronger than others, but because he can accomplish so much; he can make his life tell in the work of the world.

In order that competition should be productive of the best results, there should be no question of personal aggrandizement or the putting of one school, one university, one system, above others, but the feeling should be cultivated that the contestants are taking part in order to raise the standard of athletics or of gymnastics, by showing to what state of perfection human skill and strength may attain. For this object all the enthusiasm and the zeal and the ambition of players and spectators should be aroused. When, as is often the case, the excitement and interest centre in seeing one college win from another merely to secure the honor of first place, or when the people of a victorious nation in an international tournament court the thought that by their victory they have proved their superiority to other nations, the moral effect is pernicious.

Competitions are justifiable when they are experiments by which valuable data may be obtained for use in promoting the science of gymnastics. When games are played, teachers and trainers should encourage the admiration for skill. The best man should win, and his feat should be applauded not because he did it, but because he made a good attempt, because he used his powers to the best advantage, because he showed by a successful effort that such a thing could be done, thus opening the way for others who, in attempting to equal his feat, may even surpass him, thus raising the standard of physical excellence. Competitions are said to encourage class spirit—co-operation—but class spirit may be all wrong; it may be a kind of Chinese wall. The co-operative spirit is ideal if it reaches out to the utmost limits of creation. When a person originates an idea, and it is good, it is his duty to spread it as soon as possible, that all may benefit from it, and that others may have a chance to improve on it. If he gets a patent on it and keeps it for his own benefit, financial or otherwise, he is not in sympathy with the spirit of modern education.

There is one way in which competitions may be really glorious; i. e., when all are competing to further a cause, and when any

one who does much—not the most, there should never be a question of *most*—is encouraged by the plaudits and sympathy of his fellow-workers to persevere to something still better. Such a competition accompanies every science that is great and noble. We should welcome every attempt to further the cause, whether it proceeds from one source or another. I believe that gymnastics will never occupy its proper place among the sciences if the stumbling-block of professional jealousy is in the path of the workers. When all teachers of gymnastics of whatever belief will join hands to serve the public good, when this one or that one will overlook the things that offend and will immolate their personal feelings on the altar of a common cause, I have an idea that there will be an epoch in the history of gymnastics.

#### DISCUSSION.

Baroness Rose Posse—In this connection I desire to mention a conversation I had the other day with a member of a Harvard team that defeated Yale, a gentleman about sixty years old. He said that every member of that team had died of heart disease, and he is the only one living at present.

As we have a number of papers this afternoon perhaps the discussion of this subject had better be confined to a few moments.

Dr. Krohn—As a Yale man, Madam President, I cannot leave that remark pass without explanation of why this Harvard man died of heart disease. Harvard has won so few games from Yale that that would give no team heart disease. If you could find Yale men dying of heart disease, I think the illustration would be more striking.

I think we will all acquiesce in the general lines presented by this paper. We emphasize and accentuate certain features and phases presented, but I think there is a reason for the serious conditions and results that sometimes occur from competitive games, especially in our secondary schools and academies, among the students. I think that the physical condition of many a high school boy has been impaired because of the tendency of under-school teams to ape the college teams and indulging to the same extent in competitive games. For instance, in foot-ball games the halves should be fixed at fifteen minutes for high school teams instead of thirty minutes.

I think that no game that requires a very large amount of endurance should be indulged in by the high school pupils for the reason that he does not fully develop until he attains the age of 25 or 30; such efforts as tend to the bursting of blood vessels should be avoided by them. The mile run and other events which require great endurance and are indulged in by university

men with less harm are certainly likely to be very serious in their results to a high school boy of the very rapidly growing ages of 17 to 19.

I believe it is true that the life of an athlete, in many cases, has been materially shortened because of his exclusive, steady, consecutive and constant training along certain definite lines. I am not prepared to make the statement quite as sweeping as made by the president, but I do think it would be an excellent thing if some of our college professors and research men would make a study and compile a history of record breakers in different college events for the past 15 or 20 years, and even go back further, and ascertain what their physical condition has been since the events.

I know a young man whom I trained in college to the extent that he was able to make an intercollegiate record for the high jump, i. e., 6 ft. 2 in. He died shortly after the event, but I don't know whether the cause was his wrong training or not. However, I do know there are many record breakers who are to-day strong, healthy and vigorous, and have never had heart trouble. I would very much like it if we could have a study of college athletes, record breakers and winners covering the last 25 to 40 years to ascertain how many of them have died of chronic trouble after leaving college in 10 years, in 15 years and 25 years.

The denunciation of competitive games was so well presented by your Madam President that I must find something to say in opposition, for I think she was too hard on them. In discussing and condemning competitive games we are apt to lose sight of their main benefits, not only during the playing of the game, but throughout the entire practice and preparatory period. No boy can indulge in a game of foot-ball without developing in him courage and bravery that will stand in good stead for him in after life. I know there is continuity of purpose and certain moral qualities developed that are an advantage to him. I know that there is certain courage developed in foot-ball that is not developed elsewhere. If there is some other way of developing these qualities, that kind of nerve, I would be for that way and bar out these records.

There is nothing so contemptible to me as a boy or any living man who will not resent an insult and can't strike back blow for blow. There is nothing in the world so contemptible and despicable as a physical coward among men, a sniveling physical coward, and there is nothing that will take that out of a boy like foot-ball. I will say in conclusion that I would rather my boy would make the foot-ball team at Yale than to win the valedictory. Of course, if it was Harvard I would not care so much.

Mr. Day—I am very much pleased with the baroness's address, and also with some things the gentleman has said here. The statement was made that a man who was trained in an English college crew had died of heart disease. Dr. Gulick, in an address in New York, made the statement that the fault has not been so much in the training, or possibly the work they did, as in the lack of exercise afterwards. The subject of competitive games by high school students was also discussed, and I wish the room could have been filled with high school teachers. He said the high school boy is not yet prepared for the athletic competition that the university men are indulging in, and are aping those events before they are prepared for it. I am disappointed to hear these sweeping charges against foot-ball. I feel as the doctor does in regard to foot-ball. If I had a boy and he did not play foot-ball I would make him play; he would have to play foot-ball or he could not live at my house. It is a splendid game and we should not decry it. It is no Sunday-school picnic, but a strenuous game. Many condemn it as a brutal game; it is only brutal when played by brutes.

I dislike to take issue with the baroness upon this subject, but Dr. Randolph Faries has made quite extensive research along the line of the amount of heart trouble that may come to athletes in after life, and the result has not been in accord with her views. The men spoken of by her may possibly not have been trained right, and in the case spoken of by the doctor the heart disease may have been produced by some unseen cause before the doctor took him in training. The suggestion in regard to examination before competition is an excellent one.

Mrs. Tucker—I would like to ask the doctor what distinction he makes between physical courage and moral courage in the education of a boy.

Dr. Krohn—I make this difference. Physical courage is that in a boy that will make him hit with his fist. He has moral courage when he goes home and tells his mother about it, then she goes and tells his teacher about it, she tells the superintendent, and then the boy finally gets punished.

Mrs. Tucker—I do not agree at all with the doctor in that. There is in the city in which I live a very well-known man, 6 ft. and 2 or 3 inches tall, of very fine physique, whose physical courage does not come up to his moral courage by any means, but if occasion demands it he has as much of both as any man. I don't know anything about the "running home and telling mother" sort of a boy, but I am very sure if a boy is educated to develop his moral courage his physical courage will keep pace with it. It is not the case of the biggest man that has the most physical courage.

Dr. Krohn—But you would not go so far as to say that moral courage is sufficient; you would not go so far as to say a boy should not have physical courage.

Mrs. Tucker—I think there are times and places where it takes more moral courage to induce a man not to fight than physical courage to fight.

Dr. Buehler—In regard to the Harvard team I desire to say a word, as I have always been interested in this question. The real cause of this heart trouble has not been given. If an examination had been made at the time it would show that the pulse came up to a very high pitch, and not only the heart, but all the other muscles as well, were developed up to this very high standard by the training for the game, which had, of course, been very rigid. The very next day after the last foot-ball game the participants will resort to all sorts of excesses; instead of continuing some well defined training, perhaps not so severe, but some manual form of exercise, regulated and looked after, they discontinue all training.

The training should be looked after as carefully after the games as before. After such games the muscles undergo a change, a degeneration which causes the muscles to relax, and a fatty degeneration or change takes place. More or less attention has been given this subject by our colleges, and it is a well known pathological fact that a fatty degeneration of the heart takes place; the muscles themselves degenerate from lack of exercise. In my opinion foot-ball men should continue their training for a time after the game, or some form of exercise that will relieve the muscles from the sudden change, though, perhaps, not to such an extent or in so severe a degree as in preparing for the competition.

Mrs. Tucker—Just as soon as the competition ceases don't they always stop training?

Dr. Buehler—That is a question I can not answer.

Dr. Krohn—I think if a man has suitable training he will feel so full of ginger as the result of that single training, whether it was one year ago or four or six years ago, that he feels he must run a mile before breakfast or take some other exercise to keep himself down.

There is a point that is very important that I think has not been mentioned. There is a period in a child's life that the teacher and parent has not sufficient regard for. It is, perhaps, the most critical period excepting the period of dentation and occurs about the age of eight and a half, at which time there is an immense change in the development of the heart.

The great physical crisis in a child's life is dentition. There is more cause for anxiety for a child under three years old than

a man taken down with typhoid fever. A larger proportion of cases of typhoid fever among men recover than children under three years old survive dentation. That shows how critical it is. At the age of about eight and a half years there is another period when the heart is undergoing important development, but the heart can't pump any more blood than it could before; yet the school requires the same exertion and the development makes a greater demand upon it than at seven, and it has no greater pumping power. It is at this period that such exercise as rope jumping and efforts that strain the heart should be abolished.

Dr. McCurdy—One word with reference to moral courage. One of a foot-ball team made the assertion that the coach took it upon himself to direct them to lay out a certain player, as he expressed it. He says, "I want you to see that that man is laid out in the first twenty-five minutes of the game. It means win if you lay him out in that time." It was this man's first experience to the team. He says to himself, if that means foot-ball I am done playing foot-ball. It seems to me that it took more moral courage of the right sort for that man to take that position and say that thing than it would for him to have gone in and slugged the man as the coach directed him to.

Dr. Day—It seems to me that a number of college athletes have injured themselves by refraining from taking exercise following the competitive games. I have attended students, and some of them have been Yale foot-ball men, who have come to the hospital. Subsequent to the events they took no exercise, began eating heavily, and had not as good hearts as they had before. This is due, in part, to their leaving off exercise at once.

By talking with these men I learned that they were attending a medical school and would sit at lectures or work in the laboratory, and as the work is so arduous they are practically not permitted to take exercise. They live along the first year fairly comfortably before they begin to feel the effects. It seems to me that we should encourage the training of men each year and so meet the requirements of physical education by giving them what would be a normal condition for a sedentary life.

Baroness Posse—It seems to me that the consensus of opinion is that there should be a gymnasium to which every college graduate should resort for further training.

Dr. Krohn—Like an asylum I am connected with. We have a place where we put the recovered patients to fit them for the duties of their future lives; so we would have a place for foot-ball men to prepare them for future life.

## GYMNASTICS FROM A PHYSICIAN'S STANDPOINT.

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The commercial spirit of to-day has made its influence felt in practically every line of work; this is none the less true of medicine and physical training, which latter I regard as another specialty of medicine, viz.: preventive medicine. It seems to me that at the present time there is a great opportunity for the advancement of the work of physical training, and my object in presenting this paper is to place before you the subject from my point of view and to call your attention to the close and intimate connection between the lines of work, and the necessity of still closer relations, with the establishment of your work on a thoroughly ethical and scientific basis. The advancement of one would naturally mean the advancement of the other, and as new theories and discoveries are brought forth by one, they would be taken up and applied by the other and both be benefited by the co-operation. Until within a very few years gymnastics have been an entirely foreign subject to the average practicing physician in this country. It has never been casually mentioned in his course of training at the medical school, and all that he would know concerning it he would get from outside associations, either in the college or local gymnasiums. He would be in practice but a very short time when he would be consulted regarding the value and means of exercise, and of the various systems of physical training. His opinion is looked to as the best of authority by the people seeking his advice, and only you who are interested in this work know how ill-fitted he is to extend real practical help.

The growing demand on the part of the general public, and the great prosperity of the various movement cures, etc., will drive the question home to the general practitioner and awaken his mind to the needs of the times. The medical profession has always been slow to accept new principles and theories and is very difficult to reform. Not much, therefore, can be expected from any radical reform, but lasting good will surely follow the earnest and scientific work that is now being done by the members of this Society. It is a great misfortune that many good things in the line of medical improvement are first advocated by charlatans and used for their personal gain; this naturally militates against their acceptance by the profession and accounts in a measure for their slowness in adopting medical gymnastics, as well as electricity, the water cures, and many other things. It is gratifying to me to find, in more recent treatises on therapeutics, chapters devoted to these subjects in a more or



less ethical and scientific fashion under the heads of Mechano-Therapeutics, Electro-Therapeutics, and Hydro-Therapeutics; they certainly belong there and should be taught thoroughly. Then we find the same subject making advance under another head in a general recognition and adoption of hygiene. You may be surprised to know that these advances are very recent and have been forced by external demands. Although I mentioned previously that the medical profession is slow to accept new ideas in teaching, oftentimes when a new matter is put forth it is taken up with great enthusiasm, though many years elapse before it is accorded its proper relative value. Despite the conservatism in the profession, fads are often practiced through this enthusiasm. This has been especially noticeable during the past five or ten years, when pathology and surgery have been advanced almost to the exclusion of and rather with contempt for medicine and surgery. Of course, the many recent discoveries and improvements in these branches have been accountable in a measure for this enthusiasm. Let us hope that when the reaction comes in the favor of medicine, as it surely will in a short time, medical and educational gymnastics will be firmly incorporated and receive their proper consideration and accord. Medical gymnastics should have a place in our therapeutics as prominent as digitalis, strychnia, or any other of our most important drugs, and it could receive the same consideration as do drugs in the treatment of that subject, as I will try to point out shortly. For the sake of convenience in presenting what I have to say, and also to point out to you more clearly the close relation between gymnastics or exercise on one hand and drugs on the other, I will use the same classification as is ordinarily used in the consideration of drugs by a therapist. Gymnastics, both medical and educational, are so closely related that in referring to them I shall not attempt any distinction, and what I have to say from my standpoint, I think will hold good for both subjects, and I will consider the value of exercises in general.

This classification for the description of drugs is found in practically all the works on this subject and is as follows:

- 1st. The general description.
- 2nd. Physiological action of the same.
- 3rd. Therapeutical action and limit.
- 4th. Toxicological effects.
- 5th. Therapeutic indications and dosage.

You will see at once, before discussing these divisions, that there is no one drug which would have such a wide range of usefulness, and which would require a greater study, or be more difficult to classify under any special therapeutic action. Of course, first of all, exercise is a general tonic and alterative

with general muscular stimulation, a cardiac and respiratory stimulant, also general nerve and brain stimulant, great exciter of general metabolism, increasing blood changes, exciting gland secretion, aiding digestion and bowel function, and in fact affecting every part of the human anatomy. Where in a *Pharmacopœia* is there to be found any such drug? In fact, it could be put down as belonging to all the various classes of drugs. This is subject matter enough for volumes; but my object in presenting the subject is to show my standpoint and throw out a few hints which have occurred to me in my work as a physician, with the hope that they may be of some service in advancing your work. Many of the advances in medicine have been made by developing things on a scientific basis after they had been thoroughly established and recognized in an empirical way, and so it might be with your work.

With the first division, or the description of varieties of movements, you are all much more familiar and better able to treat at length than I am, and so I shall pass it over without consideration.

Regarding the second, or physiological action of gymnastics, you are all undoubtedly interested in the application which is just now receiving considerable attention in this country. It seems strange that so little use has been made practically of our knowledge of physiology in gymnastics, and that the Swedes should have been alone in the scientific application of gymnastics for such a long period of time. You all must have heard more or less of the success of the Osteopaths in their work and wondered what methods they have pursued to have obtained this success( in referring to them in this way I certainly do not want to be misunderstood and made to appear as approving of their methods); but I do feel that they have gotten hold of some truths, and are making use of them in perhaps more or less of an empirical fashion, which would be well worth considering.

They make great mention of, and claim results through the consideration of the actions of the sympathetic nervous system; and many of their forms of treatment are based on the theories of the physiological action of sympathetic influence. When we stop to think of the great, far-reaching influence of these nerves, about which so little is known practically, it would seem as though it might be of some value and worth much thought from a scientific standpoint. There is no doubt that through the influence of this sympathetic nervous system many lives are either lengthened or made short.

Unquestionably, men have died through the depression and relaxation following great shock, and all of you know the far-reaching effect of a solar plexus blow which has its effects through this system, as well as various other injuries, and when

you consider these evil effects, which can be brought about through the sympathetic nerves, doesn't it seem possible that these same agencies could be used to produce correspondingly good results? Think of the close relation between the sympathetic system and the general circulation, and how in an instant it can affect a change in the blood pressure and also the close relation between it and all the vital functions and the various reflex actions, and from these empirical suggestions, study out from a scientific standpoint the therapeutic action of the sympathetic nerves. Surely it does seem that properly applied movements and massage could have, through the action of these nerves, a far-reaching effect. I hope that this may lead some of you to a closer consideration of the physiological action of this whole sympathetic nervous system, and to a classification of methods which will bring about good instead of injurious results.

As to the therapeutic action and limits of exercise I have very little to say, for the relation between it and the physiological action is so close that it would amount to a discussion between educational and medical gymnastics.

Under the fourth division, or that of Toxicology, I want to point out a few of the evils which I have noticed in the best methods of physical training. It would surely seem that, if the proper system of training was employed, the subjects should live longer than they have in the past, and that our athletes who have been ordinarily regarded as the true type of development, should not so often die in early youth, and should be better able to withstand the invasion of the ever present microbe and undergo the surgical necessities of the present day. You would naturally suppose that an athlete would be one of the best subjects for any operation, as I did until a few years ago, when I had a most profound and lasting impression made upon me while performing a minor operation at my office under chloroform, upon a finely developed and apparently healthy, athletic chap. He was in the pink of physical trim, and I had no fear whatever in giving him the anæsthetic. He had taken very little chloroform and had lost no blood and suffered no surgical shock, when suddenly and without cause he stopped breathing and his pulse went to nothing; in fact, he was practically dead, and it was with the greatest difficulty and after working for an hour or more that I finally resuscitated him. He had evidently suffered a sudden dilatation and overdistension of the heart muscles, which was unquestionably the result of faulty training in his athletics. Such experiences are naturally to be least expected in this type of individual and aroused my interest somewhat in the question of physical training. Certainly such things would not occur if the person was properly developed. In this type of patient the evil result has been from too severe a training with great

physical strain followed by a complete relapse into sedentary life with more or less lack of any well defined system of exercise. Such a course is sure to be the cause of a fatty degeneration of all the muscles that have been over-developed, and more especially is this true of that all-important muscle, the heart, and consequently when any sudden strain is brought to bear on the individual, the evil effect is first felt in the heart, as it is the most vital muscle of the body. Such a result could be avoided by athletes continuing their training for a length of time after the final contests are played, and in fact I think it is very essential for trainers to regard this question of overtraining very much more carefully, and to plan for the continuance of a careful schedule of exercises which should be followed for years. The harm, as you will see, results from the sudden discontinuance of the exercises. Again, there is the comparatively short life of many athletes and their susceptibility to many diseases; especially is this noticeable in the susceptibility of runners to phthisis and lung troubles, and this should be guarded against most carefully in the training of these men. These conditions, to my mind, are, therapeutically speaking, true examples of the toxicology of exercise, and I hope they will be rectified in due course of time. Unfortunately, these results, together with the generally low standing of athletes in the past in their studies at college, have moulded a public opinion against athletics, as they have been carried on in this country. Of course you all realize that these things are the result of inexperienced and unscientific trainers; but they are happening in our largest colleges, where these trainers are given full sway and are supposed to represent the product of our highest intelligence and learning. It depends upon you workers in this branch to make yourselves recognized and your influence felt, so as to be able to dictate the proper methods. To my mind there is no better way of beginning than by impressing yourselves upon and allying with the medical profession. Under the head of toxicology might also be mentioned the many injuries to the internal organs and the extremities, as well as the subsequent effects. Fractures, of course, are the most common and perhaps have the least permanent injury. Muscle ruptures unquestionably occur oftener than we suppose and have more injurious effects than appear on the surface, as so little attention is paid to their treatment when they occur. Very often when a muscle or tendon is ruptured the part is merely rubbed or bathed and the player continues without a great deal of discomfort at the time, but with perhaps permanent weakness following, whereas a fracture will receive much care and consequently little permanent injury. The great increase within recent years of the various forms of sarcoma, both

in the internal organs and on the extremities in young people have led me to believe that in certain instances they have resulted from old injuries received, in perhaps a foot-ball game, which were forgotten, and this might help to account in a measure for their recent greater prevalence. In every case of this growth you will be able to elicit the history of an injury, and it does seem possible that some of the heavy blows and bruises which are the result of foot-ball have a more lasting effect than we ever supposed and could be avoided in the game without its losing any of its attractive features. These could all be prevented by a more careful supervision of the playing and slight alterations in the rules of the game. It is worth some thought on the part of physical trainers.

In the last division I made, or that of therapeutical indications and dosage, there is an endless amount to be said and great future possibilities for good work. Opinions among the medical profession are changing very fast regarding this subject, and the most progressive physicians are surprised to see the improvement which follows carefully directed exercises in the various diseases where in the past it has been most especially guarded against. This is nowhere more striking than in the improvements following carefully planned exercises in conditions of weak heart and in many surgical conditions, such as fractures and chronic tubercular troubles where the first part of the treatment was formerly to confine the patient to bed and avoid all exercise. The great value of exercise and development was impressed upon me lately by my experience with a patient suffering from a long-standing kyphosis who had previously been cautioned by his other physicians not to do this or that sort of thing so that he felt that he could not do anything a normal man could do because of his back trouble. Consequently, it was with great hesitancy that he followed out my directions to go swimming, walking and do the various exercises which I urged.

The improvement which followed his doing these things was so marked that one would rather marvel at the result. The immediate change which follows in the rapidity of healing in a wound is very noticeable in patients who are confined to bed for any length of time and then are allowed to get up and take exercise. Very often a sluggish wound will immediately become active and heal and an entire change take place in the whole body. Such things will show to the physician at once the great value of exercise and the necessity of as short a confinement to bed as is consistent with the medical consideration of the case.

As to the dosage of exercise, I feel there is another great chance for much thought and careful study and definition. What a good thing it would be if we could have this subject developed

to such a standard, where we would have an exact meter of energy used in various exercises, so that we could all prescribe the exact amount required in the various conditions to such a nicety as we now prescribe drugs in the fractional parts of grains. The lack of detail in such matters became a laughable thing in my experience some time ago, when I advised some walking for a patient on the verge of nervous prostration. I failed to prescribe the exact distance for her to walk, and when I saw her again she told me in a very emphatic way that she would not walk any more, that she had walked ten miles the day before and came home exhausted and completely upset from its effects, and that walking did not agree with her. This will serve to show what a small degree of common sense is ordinarily displayed in such matters by otherwise intelligent people, and how necessary it is for us to be most specific in all details.

Lastly, I wish to say a few words regarding the general style of training which has been followed out lately, and make a few hints as to the lack of practicability in combining many of these exercises with the ordinary vocations and point out to you the great present difficulty of a practising physician in directing daily exercise to many people who do not have access to any gymnasium and who have very short leisure hours to carry out any well-advised course. The people at large seem to me to be too much imbued with the idea that they must have all the trappings and paraphernalia of a gymnasium to take any exercise, and also to have the impression that exercise without these things is not of much benefit. Consequently, when pupils leave their schools and are out of touch with the gymnasium they are at a loss to know how to help themselves in physical training in ordinary everyday life and to make use of what they have learned, and are unable to combine it with their work. The fault seems to appear here that has so often been found in other methods of instruction, that too much attention has been paid to the detail rather than to the fundamental. If the pupil is made to understand the true value of physical training, that of developing a healthy mind in a healthy body, prepared to meet all vicissitudes of life, then I believe we would be reaching nearer the ideal of this work. Then, when the pupil leaves the gymnasium, school or college he would be better able to continue through life a course of training which has been started for him in the right way. The great success, which several much-advertised methods of physical training have attained, depends entirely upon their practicability and easy adoption, without interference with the routine duties, and also to the lack of apparatus used; I constantly hear much regarding their value from many of my most intelligent patients, who claim great merits for these methods, which, from my ac-

quaintance with them, seem to be nothing more than a shrewd adoption of the Swedish movements operated under the prevailing American Monopoly Scheme.

I wish that you would give thought to a plan which would help affect the many thousands that are not now influenced in any way by the present system of carrying on physical training. I refer more particularly to the class with whom I have been brought more closely in contact, that of the great working public, the factory hands, the store clerks and the like. The children of the public schools are being looked out for quite thoroughly in nearly every part of the country, but these persons of whom I make mention have very little opportunity except in some few municipal gymnasiums and from the Y. M. C. A. systems. These are all very good so far as they go, and I do not mean to depreciate their work in the least, but their influence is too local, and the only possible way that I can see of bringing about the desired result is by advocating a State or National movement for the establishment of gymnasiums and their regulation where physical training will be taught separately, and free from any other influence, and for the great benefit and improvement of the public health. Why should not our boards of health be empowered to establish such gymnasiums and given authority to inspect the general physical conditions of this working class with as good results in the prevention of disease, and with the same arguments of saving expense to the State that they now use in carrying on their work against contagious diseases by vaccination, sanitation, etc. It seems to me that the changing conditions of life in the large cities demand this thing from the Government for the sake of the public health, just as much as it is demanded through other lines of work in preventive medicine. Can you imagine what the far-reaching effects of a system of physical training on such a broad basis would mean to your work, to my work, and to the physical conditions of the general public? It might appear ridiculous to one not knowing the true feeling of a conscientious physician to hear him advocate a measure like the great advancement in physical training, which, if carried into effect, would be sure to mean to him a great pecuniary loss and rob him of many of his patients. But I suppose history would again be repeating itself and we would revert back to the ancient custom that I understand has been followed in sections of the far East, where people paid their physician a regular salary as long as they remained well and healthy, and when they were stricken with disease they cursed and abused him. It might not be such a bad change for us physicians after all and would probably divert many of us into the work of physical training.

"DEVICES."

MISS MABEL PRAY,

Director Physical Training, Public School, Toledo, Ohio.

A "device" is a means to an end. In ordinary wording it is a scheme backed by a purpose, and that purpose is three-fold:— It is "mental" in that it acts upon the imagination.

It is "moral" because its function is to open the soul of the child and fill it with joyous liberty.

It is "physical" and helpful in the gymnastic lesson in that it puts the exercise at its best.

There is no branch of education in which "schemes" are more necessary to hold the child's attention and to stimulate the mind to vigorous activity than during exercise.

We are told that, "happiness is the most powerful of tonics," and that, "Cheerfulness is a friend to health." If we can keep these truths ever before our teachers, the gymnastic lesson will be helpful and instructive; for I firmly believe that the interest felt by the children in the exercise is of as much importance as the effect itself.

With the play idea uppermost then, the child in the primary school should receive his daily lesson. Some few commands may be given, but only the simple ones necessary for a foundation in the years to follow.

It is in this department that "devices" form so important a part to success and are the natural outlet for all the energy and restless action which marks the healthy child; for, when he plays at flying, skipping or trotting, he is merely showing forth in his own activity the joy and life of the bird or animal which the motion typifies.

To secure a perfunctory response of the body alone is nothing; we must capture the child's mind and heart—then, and then only, will follow that discipline and culture of the body which means harmony.

In the higher grades, the pupils are led more to understand that the exercises are for their good, and it is explained that in order to be strong and well, to be an excellent swimmer or skater, to ride a wheel or skip a rope, in fact, to have fun, and to do everything that boys and girls enjoy doing, it is best to have a strong body and do the exercises in the right way.

So much depends upon the mental attitude—make it a diversion, and it is helpful; a drudgery, and it is harmful.



Our older boys and girls, however, are not above enjoying "devices," and the teacher of gymnastics finds, when the early Spring days appear, that "side remarks" are very necessary.

The lazy boy in the back seat will straighten immediately when reminded that pupils who are bright in arithmetic are always bright and wide-a-woke in gymnastics and can think quickly in one branch as well as another; or the boy may care to know something about his lungs, and how to use them when he goes to the river to swim. When he dives under the water or floats, he must have strong lungs, and how can they become strong if they are cramped and lazy, during all the hours passed in the school-room?

In the marching, when the heels are apt to be especially noisy, it is well to wear "rubber heels," at fifty cents a pair, and try not to lose them during the entire lesson.

Sometimes it will interest and help the inattentive girl or boy to place on the blackboard a rough sketch mostly in straight lines, illustrating and bringing out the main points in the lesson, or, an appropriate motto, written high, where all may read, is often productive of good results.

This time in the year the motto should be, "Give much attention to deep breathing these spring days, both in the school-room and out of doors."

The resourceful teacher will find many ways to keep up the enthusiasm and vigor, but the never-failing "device" for the older pupils and the one I am always thankful for the entire year is the "Swedish System of Commands"—it never fails to interest the pupils, and they are rested and ready for work at the close of the lesson.

I know of no better way to illustrate what is meant by "devices" in the primary grades, and how we interpret the word in the public schools of Toledo than to practice a "device" upon all present and ask you to:

"Wander for a while in the land of Make-Believe

Through its ever-smiling gardens, where the heart may cease to grieve

And all be little children for a while, and make your way

Thro' the bright and sunny meadow-lands of Make-Believe to-day."

So, if you were tiny little girls and boys just out of the kindergarten, and for the first time were confined within the four walls of a school-room, and compelled to sit still behind little narrow desks, (not long, thanks to our present school system,) I would try all "devices" known to help you keep the sunshine and play spirit that came with you the first day of school.

It would be my pleasant task to start you on the straight road

to health and happiness, and I would begin the first day by telling you a story about "Tom," following well the regular order of exercises.

Are you sitting very straight and tall and ready for the story?

There was once a little boy whose name was Tom. He was a very small boy, but he could run very fast and jump a long distance; perhaps because he had always spent the summer on his grandfather's farm and had plenty of bright sunshine and blue sky. Have you ever been out on a farm and enjoyed all the fun of running on the grass?

#### CORRECT STANDING POSITION.

On his way to school one morning, Tom noticed two telegraph poles. They were very straight ones, and he practiced standing erect and tall as they did, not leaning backward, but straight as the window stick in the corner of the school-room, with his nose on a line with his toes.

Sometimes he would try growing tall, looking up at the straight poles and lifting his heels, very slowly, one inch, two inches, three inches. His teacher told him that would make strong ankles, so that when Jack Frost came and made the pond smooth and bright, Tom could learn to skate and to cut a large circle on the ice.

I wonder if we could lift our heels three inches. Strong girls and boys can sometimes lift them five and six inches.

#### HEAD EXERCISE.

Let us make a picture frame, large and round, (arms lift to circle over head) and turn the little picture toward the windows, and then the blackboard, being very careful to keep the frame round and straight, as if it were hanging on the wall at the back of the room. The picture in the frame can also move forward and backward, as if bowing to the people who pass by.

#### ARM MOVEMENTS.

How many of you know how to make a railroad, (arms forward lift) a straight and strong one, with no little thumbs standing up to throw the cars off the track? And a bridge for the railroad (arms forward bend) one that will swing open (arms half forward bend) when the large steamboats come down the river, and then close again very quietly?

On either side of the railroad are the telegraph poles (arms upward lift), straight ones, like those Tom saw on his way to school. We do not want any crooked poles, because the workmen always throw them away.

TRUNK EXERCISES AND BALANCE MOVEMENTS.

In school, boys and girls learn so many pleasant games, but before I tell you about them, let us play we are a paper of pins, and see how many rows are even and how many new and straight pins there are. I hope there are no bent or crooked ones.

Now we are ready for the game that the boys always like, about the "Jack-in-the-Box"—

"Let's play we're little boxes, standing in a row

With covers down and locked up tight—just so—(knees bend)

Turn the key, each one unlocks,

And up pops a little 'Jack-in-the-box.' " (Spring up on toes.)

And the one about the little fingers that

"Gave a party, and every finger danced,

Tom Thumb began the frolic and bowed, and hopped and pranced."

The First Man, Tall Man, the Weak Man and Small Man, all did their share, then—

"They danced one set together and helped each other through,

Then all bowed so politely and bade a kind adieu."

Or the game that all the girls enjoy, about the little mice and the hungry pussy-cat in the corner—

"That goes to sleep, goes to sleep, head and tail together,

Then little mice around her creep, round her creep, lightly as a feather."

When the pussy-cat wakens there is a great scampering among the mice, for they do not wish to be caught.

MARCHING.

On Washington's Birthday and Memorial Day, Tom and the other boys always formed a military company and played the fife and drum. Do you know of something we could do that would remind us of the soldiers? First, stand very straight like the captain. Now make knapsacks on the back (fold arms behind), and then a pointed cap (arms overhead), like Washington and his men wore many years ago; and now a pillow (neck firm) for the soldiers to sleep on at night.

The girls may play the drums, by tapping softly on the desks. one, two, and a one, two, three, while the boys march around the room and keep time to the music. Let me see, Jack may wear the large soldier's cap and Howard will carry the flag. All ready! Mark time! Left, left and left, right, left! Left, left and left, right, left! Halt! Now, a long breath after the marching, so that we may all be ready to go on with our story.

## LATERAL TRUNK MOVEMENTS.

In the spring vacation Tom's uncle came to visit him, and he made a little weather-vane of wood to put on the shed. It was a sailor boy, with paddles in his hands, and when the wind blew it went round merrily. His uncle taught him a little verse about the weather-vane, something like this:

" There was an old weather-vane high on a shed,  
The wind came a courtin' and turned his head,  
And all it could utter, for lack of a mouth,  
Was east and west and north and south."

Tom thought the April days very queer ones, because the weather changed so suddenly. First when he would come out of school to go to his home, the sun would be shining brightly and it was great fun to watch the clouds; sometimes they were big white ones floating slowly (arm motion) then great black ones would hurry swiftly across the sky.

While he would be watching the clouds and walking very slowly with his head held high it would suddenly begin to rain very hard (tap on desk) and he would run home as fast as he could go.

On pleasant days, he liked very much to play "see-saw" in the back yard with his little friends.

How many of you know about a "see-saw" board? (Arms sideways lift.) A very straight one, so that the girls and boys on the end will not fall off. Do you remember the rhyme of—

" See-saw, Margery Daw,  
First it's low and then it's high.  
Over us the sunny sky,  
So the merry moments fly,  
While we are playing see-saw."

## BREATHING EXERCISE.

One April day when the children were having such fun with the "see-saw" board and playing at riding a bicycle, sitting very straight in the saddle and going very fast, the great black clouds suddenly appeared and the trees swayed backward and forward in the wind; soon the rain came pattering down and the children were obliged to run into the house; but when they were once inside, the fun went merrily on. First they all made pin-wheels out of colored paper and fastened them to a stick, then, with a strong breath, blew the wheel round quickly. They soon learned to take a long steady breath, and not little short ones.

Then they found some large paper bags and tried filling them with one breath, to see whether they had strong or lazy lungs.

After the bags were filled they all burst them at the same time, making such a great noise that Tom's mother came running into the room to see what was the trouble.

Soon the clouds cleared away, the sun came out again and the children ran into the yard, the boys carrying the pin-wheels they had made, and running very rapidly, so that they would make a buzzing sound like the bees, while the girls waved their arms up and down like the wings of the butterflies, and taking long deep breaths of the fresh air that is always so good after a rain.

Some day we will make pin-wheels in school and see who has strong lungs and who has lazy ones, and we will learn more about Tom, and what he did when he went to his grandfather's farm for the Thanksgiving and Christmas vacation. But now we must tell him good-bye for this afternoon, make a bow to our little friends across the aisle, and come back to our every day duties once more.

#### DISCUSSION.

Miss Bancroft—I do not know as I wish to discuss the paper, but simply to express my appreciation of it. The longer I work with little children, the more I appreciate what has just been read. I think we call too largely upon them for formal gymnastics. Of course, I think we should have some formal gymnastics, but also I think we should have more of this play spirit which Miss Pray has shown to us. I think it is a very important branch in elementary schools, and I think, if I may refer to the former paper, that we cannot too much employ the things that are interesting to the child in other school work. It is the general opinion of all school teachers with whom I have had anything to do, that there is no subject that tends so much to monotony as the class gymnastics, and I think we should make a particular study, as some of our profession have probably done, of those methods which will arouse and hold the interest of the pupils, and particularly that of putting the play spirit in as a means of doing it.

Member (Cleveland)—How much have you given for the games, how much time, I mean?

Miss Pray—The regular story is arranged to be given in twenty minutes. The time devoted in the school program is 15 minutes in the morning and 5 minutes in the afternoon, but the story itself can be given in three minutes very nicely.

Member (Cleveland)—I want to ask another question. Do you not find that these things come to a sad plight in the hands of some teachers?

Miss Pray—Yes, and in the hands of some they are very beautiful.

Member (Cleveland)—In the hands of some they will fall dead flat, we find it so in our schools. We pushed that very hard in Cleveland, and we still encourage it and have it, but it does seem to me that we must begin in the normal school, and if possible we must try to have all this come from the imagination of the teacher. As you know, children can be made to believe what you want them to believe, you can draw them to you in any way you want. Now, if we could use such a device and get it thoroughly into the hearts and minds of the teachers so that they can be able to draw upon the tremendous imagination of the lower grade pupils, it would make the school work very entrancing, and where the teachers can do that the work is very beautiful. You can take the same idea and reproduce it in so many ways but the right way, and so I say, let us use caution in this, and see that we get it thoroughly imbued in the teacher's mind, and not have them give set games and stories, which certainly prove so monotonous.

Miss Pray—I know what you mean. I have told my teachers to give it in their own way, and not in my way, to give it naturally, for it comes so much better that way. Every teacher in Toledo is obliged to go through the Normal, and, therefore, I have a chance to teach them quite well.

Dr. Ziegler—I hope that system will never prevail in Toledo as it has in Cincinnati. I don't believe any one ought to raise their own teachers. How long do you continue one of these stories in the lower grades?

Miss Pray—We never give the story more than three times, and sometimes four times, when it can be given that many times, of course, it is on account of the teacher's own personality.

Dr. Ziegler—Do you give them a series of stories, or do you use six every week?

Miss Pray—I have a story printed all ready for them, and see them myself once in every five weeks.

Dr. Ziegler—I was very much interested in the papers read here. I will tell you a few things we have been doing along that line in Cincinnati, so as to show that this play spirit is rather spontaneous all over the country. For several years we have been trying to play games with the children and we started out something in the order of Miss Pray's idea, but I found, as has been mentioned here, that the teachers do not always take kindly to it. Unfortunately a great many of our teachers cannot tell a story about anything; I know we have tried to get teachers to tell a story to the children on some other lesson than gymnastics, and I have seen how very poorly they are told. It takes a good deal of tact to tell a story to small children without becoming childish yourself—they will go to that extreme that they almost become

childish themselves, and then the children very soon see through it; others, if you give them a certain idea on telling a story, they will give it and harp on it till the children get tired of it, and will be reading to welcome anything for a change. We started several imaginative games in our schools; I have gone into the school room and I will have the children drawn up in lines, and I will say to someone in the first line, to name some bird for me, and they will perhaps name a sparrow, another will say a robin, and in that way I will try to get each line to tell me the name of a bird. Then I will tell them about—at this season of the year—how the birds are coming up from the south because it is coming spring and summer, I will get them interested in that way about the natural history of birds, and I will finally get the whole class running about the room as certain birds. Another thing I want to say, we exercise from now on, or for the last two or three weeks we have been doing it, with the exception of last Friday, we have been exercising out of doors. We use the school yard for the exercises. Of course, at first this attracted a good deal of attention from passersby, but that soon wore off and we are having no difficulty with that at all now, we simply take the whole class out in the school yard, and we play animals. Again the school board gives the children an opportunity to attend the Zoo and thus they become familiar with many animals they would not otherwise see. Of course, we have other imaginary games, which are games of movement, such as ball games, and in this I believe in making your own articles as much as possible, and try to impress upon the teachers that it is not necessary to have very fine materials to work with either. I will, for instance, take a piece of paper and make a good solid ball of it and then ask some boy, for what boy has not got it, ask him for a piece of twine, which he is only too willing to furnish, and tie up the ball, and before I get through making it everybody is on the alert and ready and interested in what I am going to do. Perhaps there are a dozen different ways of using that illustration, but on the whole I prefer to make my own articles if I can. We have a number of different games we play in that way. I just want to say in conclusion that I believe you want to make this transition from play to work as easy as possible, and still in the very first week to instill into the child that it must work. We have teachers in Cincinnati who can get as much enthusiasm out of a formal gymnastic exercise as would delight your heart to see, and I say again get as much of this play spirit into the work as possible, and still keep before the child that idea of work.



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*Title page*

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DECEMBER, 1903.

No. 4.

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# American Physical Education Association.

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Vol. VIII.

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## PHYSICAL EDUCATION PAST AND PRESENT.\*

WATSON L. SAVAGE, M.D.

New York City.

One of the most interesting results of the advance of science in the past century has been the change wrought in men's habits and mode of living. Before the application of steam it was necessary for the community, and in some measure even the family, to produce all it required for its own consumption. Young as such a civilization seems, it at least gave variety to a man's work and took him much of the time into the open air.

The great scientific discoveries of recent times have changed these healthful conditions of industry and forced to our notice a new and important problem. The perfection of the steam engine revolutionized the feeble trades which had struggled along with the simplest machinery, but, on the other hand, reduced the physical labor involved in production. In weaving, for example, where the hand loom or the more primitive spinning jenny had been in use, the work was now done by the power loom and, of late, the cotton gin immensely has cheapened the production of cloth although it also decreased muscular exertion.

A second factor bearing upon the health of the community is the confinement of the modern manufacturing organization with its city and factory systems. This form of development, with its cramped life and narrow activity, is ever increasing, and the invention of the steamship and the locomotive, by affording close communication with all parts of the world, has gradually added to its growth.

In the United States the evil effects of physical inaction have only lately been realized. One has merely to examine her economic history to see the change which the last quarter of a century has made. Even at the present time the task of conquering her territory is hardly complete. In 1860, crops of corn and wheat were raised without rotation everywhere to the west of Nebraska, and the manufacturing organization was estab-

\* Presidential address.

lished firmly only in the northeast. Gradually, it is becoming more profitable to turn farm lands over to manufacturing, and just so far at least the population is tending to move into a limited territory. The invention and use of agricultural machinery, in which the United States has led the world, have tended further toward this result. The use of machines in cultivating the fields has not only lightened the toil of the farmer, but also made it possible for one man to do the work of ten, so that the other nine must look elsewhere for employment.

The city naturally attracts this number, and the result is a rapid massing of the population in a small area. Where formerly man and woman, boy and child, obtained sufficient physical exercise to keep the body in a healthy state, now much is done for him. Elevators and cars on every hand have reduced exertion to a minimum, and out-door life has given way to a life spent at the desk or at the bench. Unless special training or artificial exercise be provided, a man is in danger of becoming a bundle of half-fed nerves, a misery to himself and to all about him, with prospect of a limited career of usefulness in life.

As these conditions have rapidly developed, watchful and far-seeing educators and hygienists, who are constantly studying our needs, have made demands for gymnasiums, but the question arose, "Where were qualified teachers to be found?" There were a few medical men, most noted of all being the much revered and oft-quoted Dr. Hitchcock of Amherst College, who put their shoulders to the wheel and did great service. Many spoke of them as "enthusiastic cranks," and institutions often undervalued the importance of such work, failing to offer sufficient financial inducement to attract educated men or to give this department of teaching proper representation and recognition upon their faculties. As a result, we had the ridiculous position of acrobats, prize-fighters, and handy janitors in charge of the physical well-being of young men, while the necessity of providing exercise for the girls and the women was becoming more pressing and there was no way to satisfy this need. Briefly, these were the conditions a few years ago, when in discussion with men who had had the advantages of university education and keenly felt the importance of this subject, it was decided that the only way to raise the standard of the work and put it on a scientific basis was to open normal schools to prepare teachers to fill the rapidly increasing number of positions throughout the country and the places so poorly filled.

Such schools were organized, for the most part, offering a one-year course, which it was soon found necessary to extend to two years. The early instruction was largely practice with a little anatomy, physiology, hygiene, and anthropometry added

to the floor work, and the only entrance requirement was a good moral character and a healthy body.

The Y. M. C. A. met the same difficulty of supplying its numerous branches with teachers trained to the work by organizing similar schools. A well-planned normal school of physical education at the present time requires for entrance a high school diploma or its equivalent and the full time of the student for at least two years. The teaching corps numbers a dozen instructors, and the subjects taught are anatomy, physiology, hygiene, psychology, history and principles of education, chemistry, physics, physiology of exercise, anthropometry, first aid, methods, history of gymnastics, physical diagnosis, voice culture, American, Swedish, German, Delsarte, and æsthetic gymnastics, dancing, military drill, fencing, games, and athletics.

A number of such schools are in full operation in different parts of the country, and several of our colleges also offer special courses for those desiring to become teachers of physical training. Only one independent normal school of physical education that I know of is endowed, although I question if any are self-supporting, general gymnastics being held in connection with them to furnish the means of their support. The results of the movement have at least met the first hopes and expectations. The standard of requirement has risen and is still rising, and a corresponding increase in compensation, rank, and recognition has taken place. It seems incredible that philanthropists have not provided one of these schools where not only teachers could be trained but research could be made in this most important branch of science.

Exercise we must have, it being absolutely essential to our existence. The problem for solution in the future is, "How can it best be obtained and how can it most wisely, safely, and advantageously be administered in an individual case?" All cannot take the same exercise either in kind or in amount, and it requires not only a careful study of the individual and his past life, but also an accurate knowledge of the physiological value of each exercise in order that the best results may be obtained in each case or in a general classification. The physical trainer of to-day must have a wide range of exercises and at the same time should be well trained in observing and judging physical condition that he may not, by overdoing, add to the depletion of the system or undo much that has been gained. The normal school should provide such experience and prepare its pupils to care for all hygienic conditions of men, and prevent, so far as possible, the breaking down of the human system. There is no factor that has had more to do with the bringing about of these improved conditions, or has exerted so powerful and stimulating an incentive

to the men who have been the leaders and the younger men who have had ambition to reach the front ranks of the rapidly increasing army of physical educators, than the association which holds its thirteenth convention in this city this week. The well-known aphorism, "History repeats itself," is thoroughly exemplified in this very field of ours. No community the size of ancient Greece ever produced so varied a type of great men, forceful thinkers, energetic workers and, above all, the perfect modeled physique which will ever stand symbolic of Olympic games. Is it not fair to assume that where a system of education was in operation, requiring the youth to spend more than half his time in the gymnasium developing his body, it should have had much to do with producing these wonderful results? Plato says that it is easy to enjoy pleasures that turn into discomfort, ill-health and misery, but, on the other hand, there are pleasures that build up instead of undermine the system, such, for instance, as the wholesome pleasure of active exercise, pleasures which develop manliness, the acquisition of knowledge, surmounting obstacles, overcoming difficulties, honorable and affectionate relations. These are pleasures that do not cloy. Man's chief object in life is to increase wholesome kinds of activity.

Again, Aristotle, in the conclusion of his "Politics," raises the question of the preparation of youth for the duties of citizenship. He does not consider whether education fits a man for living or enjoyment of life. He emphasizes the intellectual side, but insists more strongly on physical exercise and music. The athletic sports he praises, however, were not the sports popular with the Greeks of his day, such as the Olympian games, exercises of the Lacedaemonians and those of the Dorians. Who ever heard of one of these athletes ever amounting to anything in later life? Men, he says, should be trained as soldiers in the army, by regulation drills, not indulging in training resulting in the disproportionate development of any set of muscles. But they should be symmetrically developed, physically strong, active and alert, of vigorous constitution and vitality.

Perfect physical development is conducive to heightened intellectuality with corresponding beneficial reaction on the morale of the individual. This, fellow workers, I believe is the gospel of physical education we are engaged in preaching to-day, delivered, as it were, to us two thousand years ago.

Instead of holding to this old ideal of rounded activity, the intervening generations have been prone to neglect the body until certain physical destruction seemed in our path. Here and there, after centuries of decadence, strong men sprang up in various countries to fight the battle for better bodies. What, therefore, can we offer as indicative of the progress in physical development

of the man of this age? Very much as compared with a century ago, but this were as nothing when placed side by side with the high conception and general practice of two thousand years ago.

The modern advance has consisted rather in separation of this problem from other fields of learning. Like every other branch of knowledge, physical training has torn itself from the old comprehensive systems and has held the exclusive attention of certain scientists and observers, so that what once appeared through reason and common sense now also appears supported by known scientific principles, physiological, psychological and other. While it was entirely eliminated from the educational systems, it is now becoming not only an active part, but a very important factor in education. When the time of prescribed exercise, games, manual training and study periods, together with shortening of school hours, are considered, it will be seen that we are rapidly approaching the Greek standard of division for the youth—one half for the mental and the other half for the physical. As the Greek maidens played ball, so do the society girls of to-day; as the Greek thinkers and philosophers of old bewailed the excessive athletic competitions and specialization, so do many of our present leading educators. The gymnasium of the Greeks was the principal factor in education of the youth; what more important factor have we to-day? The Y. M. C. A. gymnasium is its most attractive element. How much time is devoted to body building in our vacation schools, play centres, settlement work, etc.? Is it not more than half, and are not these institutions fostered and supported for the prime purpose outlined by Plato, and, as Aristotle says, for educating the youth for citizenship? Does not history repeat itself?

It is interesting to note the ups and downs of the development of physical education in the schools of New York City. Starting in a small way in the introduction of physical work, one school at a time being favored, organized work was afterward given in a certain number of new buildings where facilities could be provided. Interest arose to the point of passing a city ordinance that all schools should contain well equipped gymnasiums. Two conditions presented themselves to be met; qualified teachers on the one hand were hard to find; on the other there was an active movement to substitute military drill. As a result, physical training received quite a blow, from which it took several years to recover. In the meantime schools were built and gymnasiums equipped according to the city ordinance, and then lay idle. Pressure for space soon required the use of these rooms and they were in many instances put entirely out of commission so far as the purposes for which they were intended were concerned. A member of the present board recently told me that only



eight or ten years ago he stood alone for physical education and was considered a crank by the other members of the board. Just at present, however, we are passing through a most significant epoch and a great advance has been made in this the greatest school system in America. A department of physical education has been created, with a single head to unify, to direct, and to develop this important body education. There are at present under this single head between forty and fifty special teachers, each having in charge the exercise of five hundred or more students, and it is the plan of the board to provide for all of the five hundred thousand children in the New York City public schools.

Another notable event has taken place in New York City, namely, a gift of the magnificent sum of \$350,000 to build a hall for physical education in Columbia University. While this is a grand thing in itself, it carries with it another purpose which should be far-reaching in its influence—the establishment of a department of physical education on a par with all other departments, with the title of Professor of Physical Education. This has been done in smaller institutions, but to be accomplished in one of the greatest and most conservative institutions of the land may be considered a landmark in the progress of physical education. This opens a training school for men and women who have passed two or more years of general college work and in time should provide us with qualified teachers. We may then reasonably ask, What are the forces which are instituting these results?

We who are studying this subject all know and feel that the necessity exists, and yet it takes more than that to move hard-headed men of the world, whose values are for the most part based upon dollars and cents and who control, to a large extent, all progressive movements.

When public opinion becomes strong enough in favor of a good movement and is sufficiently aroused to make demands on all sides and at all times, the strongest and most conservative bodies of men and women give way to the wave of reform. How is public opinion brought into line? Usually by two means.

First, suffering humanity cries out for relief, as is illustrated at the moment by the deplorable condition of affairs at Ithaca. The city vote upon the water question was buried under disapproval; still that does not excuse those in authority for not heeding the warning given some years ago, when the first vote was taken. Such a warning seems now to have been most prophetic.

The other is concerted action of a few strong men and women, banding themselves together in bonds of unison. In our own work, this is illustrated by the condition of physical education, especially in Boston, where untiring effort has been expended

in spreading the gospel of our creed. By united agitation along these same lines, the public will soon become acquainted with the necessity of action. This city has led the small army of workers, including such men as Sargent, Hartwell, and the much-lamented Posse, who did yeoman's work in the introduction of physical education to the masses all over the country.

There is every reason to believe that when physical instructors become of unanimous mind and action under the stimulus of the A. A. A. P. E., the work of this glorious cause will greatly increase. It is certainly a blessed thing that we do not all think alike and that different men and bodies of men attack problems with various methods, these often diametrically opposed to each other; still, strangely enough, both do good in their way. There are publications upon the subject of physical education the existence of which we all deplore. We justly and severely criticize their methods; still they reach a class of people that the more dignified and scientific publications are unable to interest. The so-called correspondence schools of physical culture have exerted a tremendous influence upon the public mind, whether we approve of the methods employed or not. They must give monetary returns, and to do so exert every effort to interest a vast army of men and women in their peculiar enterprise. They keep constantly before the public eye the warning of physical neglect, and active exercise of almost any kind will benefit nine out of every ten who are induced to follow the outlined system. The nine benefited are proclaimed far and wide, but the poor fellow injured by ill-advised instruction is naturally and judiciously forgotten. I have mentioned these as some of the side forces which have been instrumental in influencing public opinion.

We of the present council during the past two years have learned to appreciate the valuable service rendered the society by the faithful workers of past councils. We appreciate the cost and sacrifice it has been to them to preserve and develop the society to its strength when handed over to the present council, and we can appreciate their apprehension in turning over to younger, more experienced men upon past councils the burden of carrying on the society.

As to the future plans for our Association, I wish to suggest some points. It seems desirable that we should publish a number of the Review every month, or at least ten numbers per year, instead of quarterly, as it is now issued. This, in my belief, would be a great benefit in many ways. First, it would keep us in closer touch with each other. Second, it would keep us up to date with the most advanced thought upon problems bearing directly upon our work. Third, it would give to the magazine a circulation with other magazines of the day, thereby very ma-

terially enlarging its influence. Fourth, from a financial standpoint it would become a valuable class advertising medium, and the expense of publication could be entirely taken care of and the funds of the society used in other ways to advance the cause of physical education. Another encouraging indication of the value of the Review is the constantly increasing demand for back numbers coming not only from individuals but also from educational and state libraries. I cannot too strongly urge your hearty support of this valuable organ. Membership in the society carries a subscription for the Review, and increased membership would wonderfully strengthen the society and its publication.

I believe that a convention should be held every year and that the city selected should be widely distant from the place where the preceding convention was held. By this means we shall grow not only in numbers and strength, but in breadth of influence. The council should be composed of representative men and women from all parts of the country, instead of being a local one, as it now is.

The representation of every society in the national council has numerous advantages. Besides keeping each promptly informed as to the actions of the council, it gives an opportunity of bringing to the council those who represent different fields of work and influence gathered from large areas of the country. This representation should also bring stronger men into the local societies, and greater care in the selection of the first officer in these sections, as every part of the country has pride in being well represented in each national organization.

It would be easily possible to establish an information bureau, which would soon find reason for its existence. As it is now, much money and time are spent by us all answering calls to obtain positions for men and women. If the Association established such a bureau, where its members on the one hand could register their application with proper vouchers, and to which those having appointments to make could go to inspect the list of applicants, one of the greatest benefits to the members and the society must of necessity follow. If properly handled, membership in the society would be increased. Again, the very indorsement by the society would give protection to the public against unskilled and untrained teachers. I believe that such action would raise the standard of the work and bring the society more constantly before the educators.

A central statistical bureau is not outside the sphere of this society. To such a bureau could be sent the statistics of hundreds of teachers who take only a few records but would like a means of comparing them with the work of other instructors. In this way, material could be obtained very rapidly for compiling

tables, charts, and studies of correlation which would become invaluable. This same bureau might send out to all the members for special measurements of various anatomic types, thereby making the society valuable to the scientific world, so that money for such work would come in most plentifully. Think of the time and labor saved to you and to me if we could, at the end of each examination season, send our cards to the bureau and have a report made by experts who know all the short roads to correlating any problem and have every device for rapid work with the charts on which to make such report.

Again, there should be established in some central location a library where all the literature of current publications may be procured, at the same time the library to purchase suitable reference volumes for research workers. Such a plan seems ideal and is quite possible. In fact, this is being done in other societies. It might be advisable to create a circulating library where reference books could be obtained by the members at a minimum expense of postage. That the society has grown to be large enough to divide itself up into sections is quite evident from the present necessities, especially on such occasions as the present; but further than that, some of our local sections are large enough to be subdivided into other local sections. This has been done in Boston. New York also has taken the first step toward such a move, although for many years past there has been carried on independently three societies that might rightfully be brought within the boundaries of the A. A. A. P. E. By such subdivision greater activity is kept up in all times, and those interested in special problems can get close together. We now have a meeting of college gymnasium directors for men, likewise of secondary schools for men, held during the Christmas holidays. These have been most helpful to the members. Meetings for women directors will be started without doubt in the near future; steps have already been taken in advance. Sections on normal and elementary schools are also much needed.

Then the question at once arises, Should they not all hold their annual convention at the same time as the parent body, instead of several small societies holding meetings at different periods?

I can see several objections to this plan and many advantages and offer the suggestion merely as food for thought and future consideration.

With these few suggestions the retiring council beg to turn over the society and all its affairs to the new council, with every confidence that the Association which has called us here to-day will prosper and grow in numbers, power and influence far exceeding that of its predecessor. With increased energy, the power of the Association will be felt in every city in the country.

## THE PLACE OF AUTOMATISM IN GYMNASTIC EXERCISE.

BY JESSIE H. BANCROFT,

Director of Physical Training, Public Schools, Borough of Brooklyn,  
New York City.

The only extended treatise we have had upon the relation of automatism to gymnastic or athletic exercise is that by Lagrange in his "Physiology of Bodily Exercise," a work which in this and many other ways marked an epoch in literature upon physical training. Lagrange's application of this particular aspect of his subject, however, is very much in the large; he discusses automatism in its relation only to running, walking, dancing, etc., with very little reference to the kinds of exercise taken exclusively in the gymnasium, and none whatever to methods in gymnastic instruction. That a further extension and closer application of the study might be made, Lagrange clearly recognizes and plainly states. He says: "The subject has not been as yet methodically studied, nor has any one hitherto endeavored to deduce from this curious phenomenon of automatism the practical conclusions which would be valuable in considering the hygienic applications of muscular exercise."

In this paper we attempt a contribution to such further study. The subject involves the entire question of mental work in connection with physical exercise. When the issue is raised as to whether gymnastic exercise should require attention and effort from the pupil, thus placing it in the category of work, or whether it should be in the nature of relaxation and rest, giving physical activity without mental strain, one should be able to discuss the question with at least as much definiteness as inheres in applied psychology. We believe that every method employed in gymnastic instruction has a distinct place in an ascending scale of demand upon the mental powers, and that automatism, in which nature reduces to a minimum the mental work involved in muscular exercise, aside from having its place in this scale, affords a standard, or basis, for comparison and judgment of the various methods. We shall select for discussion but a few of the most salient topics offered by the subject.

Our point of departure will be taken from Lagrange, with a brief review of the ground which he covers and of the conclusions reached in his discussion. We shall then attempt an analysis, from the viewpoint of automatism, of some of the prevailing methods of the gymnasium. In this connection we think it will appear that some of the controversies that have waged over

methods in gymnastic teaching—for example, as to the value or worthlessness of drills; as to whether or not a teacher shall lead a class in the performance of exercise; as to whether work shall be taken to musical accompaniment or without music, etc.—are referable for partial solution at least, to this principle of physiological psychology.

Part VI of Lagrange's "Physiology of Bodily Exercise" is devoted to the general topic, "The office of the brain in exercise." Here automatism is defined as "the faculty, possessed by certain nervous elements, of putting the muscles in action without the intervention of the will," an office performed by the spinal cord. The author makes very clear the difference in nervous expenditure between movements guided by the nerve centers in the brain—or consciously directed movements—and those directed automatically by the spinal cord, and selects as the pivotal point of his argument the fatigue which accompanies the mastering of new co-ordinations, or the conscious direction and control of old ones, by these higher centers, as contrasted with sub-conscious or automatic work. "Dancing," he says, "is an amusement; learning to dance is mental as well as physical work." He attributes the fatigue from this work largely to the toxic products of mental activity, and concludes that exercise which calls for work of the centers of consciousness merely adds to these toxic products, and therefore to the fatigue, and should not be used by one who is mentally overworked. Mental overwork is a term which he employs to express so normal a condition of fatigue as that of the usual school child, and which he would presumably apply to the tired business man, or brain worker in any line. He concludes—to quote from the text—that there is "great hygienic superiority in exercise which can be performed automatically. Economy of nervous energy, complete repose of the brain, absolute inaction of the psychical faculties, such are the conditions in which automatic exercise is performed." And such exercise he would prescribe for the class of gymnastic pupils mentioned.

For the sake of clearness we may visualize this plan in a rough diagram, in which a line may be drawn to indicate the demarcation between the nerve centers of conscious movement and those of automatic movement. Any exercise once mastered by the higher, or conscious, centers above this line is handed over by nature to the lower or automatic centers below the line for after performance. To quote again from the text, "We cannot regard automatism as a character which will serve to mark off a particular group of exercises. It is rather a mode of performance which most known exercises may assume under certain conditions." These conditions include familiarity, frequent repetition,

<p>Teaching by verbal description.</p> <p>Corrective gymnastics.</p> <p>Exact co-ordinations ("good form.")</p> <p>General or gross co-ordinations ("poor form.")</p> <p>Mastering new co-ordinations.</p>	<p>Methods of conducting work which unnecessarily call for conscious attention to co-ordinations. Type —analytical commands.</p> <p>Slow time.</p>
<p>IMAGINARY LINE DIVIDING THE AUTOMATIC FROM THE CONSCIOUS CENTERS.</p> <p>Repeating old co-ordinations.</p> <p>                     Automatism favored by {                     <ul style="list-style-type: none"> <li>Familiarity.</li> <li>Frequent repetition.</li> <li>Rhythm (music).</li> </ul> </p> <p>Types of automatic exercise.</p> <p>                     Walking.                      Running.                      Dancing.                      Rowing.                 </p>	<p>Well-known separate exercises, as on apparatus or to command.</p> <p>Methods of teaching which employ urging, correction, etc; applicable to drills or separate exercises.</p> <p>Volitional effort conscious—co-ordinations automatic.</p> <p>Rapid tempo.</p> <p>Normal tempo.</p>
<p>Objective effort.</p> <p>Imitation.</p>	<p>Wholly automatic drills.</p>

CHART SHOWING THE RELATION TO AUTOMATISM OF VARIOUS METHODS OF GYMNASTIC INSTRUCTION AND PROCEDURE.

and rhythm, including music. Types of such automatic exercise are walking, dancing and rowing. Lagrange plainly states that exercises automatically performed have less tension and effort than others, and consequently have less effect upon circulation, respiration and related functions.

With this condensed statement of Lagrange's definition of automatism and of the value he places upon it as a means of avoiding fatigue in exercise, we may proceed to an application of the subject to various methods common to gymnastics.

#### LEARNING NEW EXERCISES

Is the mere process of learning new exercises—mastering new co-ordinations—so difficult as to be harmfully fatiguing? We believe that this is largely influenced by the methods of teaching used. New exercises may be taught in a way that will reduce the work of the pupil in mastering them very close to the plane of automatism; or, on the contrary, so as to make a maximal, artificial and fatiguing demand upon the centers of conscious attention.

Imitation is one of the great economic agencies for the mastering of new co-ordinations. The person who sees another perform an exercise has that exercise already partly co-ordinated in his own nervous system, so closely related are the motor and sensory powers. Imitation, in other words, is very close to the plane of automatism; it is related to that class of movements called conscious reflexes.

At the opposite extreme in methods of teaching is the presentation of work wholly by verbal description. This method requires a tense and artificial effort on the part of the conscious centers to comprehend, or think out, co-ordinate and execute the movements described in words. No other form of neuro-muscular work is taught in this way. Drawing, for instance, is not taught by requiring pupils to give expression to something verbally described; on the contrary, the motor activity is a direct reaction to the object itself; and such should be the reaction in learning gymnastic exercises. We do not believe that so artificial a method as teaching from verbal description could be too strongly condemned. Indeed it is hard to understand how anyone familiar with the laboratory experiments made by Dr. Anderson in 1893 can fail of such a conclusion. These experiments showed that greater fatigue followed the verbal method of learning exercises than the imitative method, and that a longer time was required in the process. A great deal might be said on this subject of imitation in gymnastic teaching; but suffice it here to note the fact that because it is a semi-automatic process, it reduces to a



minimum the work of learning new exercises. To continue this imitation after an exercise is once known may reduce a pupil to the level of a reflex machine, echoing the teacher's movements. Whether or not that would be desirable would depend upon the objects sought for in the work.

Another great economic agency for both the mastering of new exercises and their after performance we believe to lie in some objective interest—some apparatus outside of the body to which the body conforms, rather than to have the bodily movements themselves the sole object of attention. Many have noted this before, but an impressive experience with light apparatus as compared to free gymnastics for school children, has convinced us overwhelmingly of the greater ease with which even corrective co-ordinations are mastered when the technic is subordinated to an objective result. This principle lies back of achievement in all of the arts. When Paderewski literally carves great masses of emotion and thought out of sound, he conforms his manual skill to the idea to be expressed: he does not concentrate his attention upon the manual skill. When Michelangelo's chisel bit into the marble from great, ringing strokes, which no other sculptor of his time or ours has ever dared to imitate, he adapted his bodily movements to a creative vision so intense that it became an objective reality. We cannot afford to disregard in our work this principle of nature, by which the body accommodates itself to objective interests, when it would stumble and halt if thinking solely of its own processes.

Whether exercise be with or without apparatus or other objective interest, we believe that for the mass of normal pupils the learning of new exercises by a rational method is one of the great elements of pleasure and one of the chief means of interest in gymnastic work. Pupils continually wish to learn something new, and often the only resource of a young and inexperienced teacher for holding interest is the presentation of new material. We doubt if there would at this time be in existence one summer school of physical training if teachers did not feel this natural and healthful need for new exercises. No one thinks of confining his or her reading to two or three books, or even to the "best one hundred." Why should the novelty of a new book be a rest or stimulus, and new exercises prove an exception to the rule? To see boys swarm at recess around an overhead ladder, or a horizontal bar, each taking his turn at trying new and most difficult feats, does not give one the impression that such exercise is "instinctively repugnant." Indeed, the college gymnasium director will tell you that the freshman's complaint of the gymnasium is, "Oh, we learned to do all of those old things at 'prep'!"

Pupils who have passed an age of motor facility, or who do not belong in some degree to the motor type, may find the mastering of new co-ordinations harmfully fatiguing under any conditions; but it is safe to assume that for normal pupils new exercises taught without excessive demand for conscious co-ordination, need not be a cause of fatigue, but quite the contrary.

#### CORRECTIVE GYMNASTICS

In a distinct class by itself is to be considered that mastering of new co-ordinations called corrective gymnastics. By corrective gymnastics, we mean that class of exercise which aims to correct the habitual standing posture of the body. We believe that this work requires the greatest effort of the higher centers of any class of gymnastic exercises, for in it one seeks, not only to form new co-ordinations, but to change old ones. For instance, in a position which shows a depressed chest and rounded shoulders, there is an habitual disproportion in the tension of the anterior and posterior muscles over the chest and shoulders: the one is unduly contracted, and the other unduly relaxed. This habitually disproportionate tension is manifest in all exercise that calls these muscles into action. To alter this habitual relation, the co-ordination must be dragged up from the realm of automatic adjustment where it has been long fixed, to that of conscious direction. The higher centers have not only to inaugurate a new adjustment, but to resist an old one—a doubly difficult task. Corrective work, then, is utterly beyond the sphere of automatic exercise; it is a function exclusively of conscious co-ordination. As Dr. White said in his *"Elements of Pedagogy,"* "Automatic exercises may increase the mechanical facility with which pupils repeat processes, but such practice never corrects errors or suggests improved methods or processes. They beget the habit of non-attention to conditions of right activity." We may, therefore, put corrective work on our chart at a level of decidedly conscious effort.

#### THE EXECUTION OF GYMNASTIC EXERCISES

Returning from corrective to general hygienic gymnastics, there are, on the part of the pupil, degrees of exactness in co-ordination which demand varying degrees of conscious effort, or, to reverse the statement, certain methods of performance are nearer to the automatic plane than others, and require less mental effort. It is a common experience that in teaching a new exercise, all pupils except the few who have reached a high state of motor education, will at first master the general form of the movements without the finer adjustments of finished execution. For example, a pupil

raises the arm sideways. The gross movement involved in moving the arm is accomplished; but the exact height and direction and bend of the joints—all of these finer adjustments of finished execution—are neglected. Or, we will say, a pupil vaults over the horse; he gets over—he places his arms and lifts his legs, and performs the gross adjustments; but for all of those finer adjustments in what we call good form—as the erect chest and head, so important for economy of effort—all of these finer and more exact co-ordinations are utterly neglected, and the pupil has to make a later and a distinct effort to master them. In other words, there are degrees of muscular adjustment, ranging from the vague and general, which are very close to automatism, to the definite and finished and precise, and the finished work requires more mental effort than the vague and general.

We do not believe that this exact problem has been covered by any of the hypotheses that have been advanced to account for the facility with which some co-ordinations are mastered, and the difficulty with which others are achieved. Dr. Gulick long ago advanced the theory that certain co-ordinations which are racially old, being more firmly established in the nervous system, were comparatively easy of performance, and that other co-ordinations, being of later acquirement, were more difficult to master. Dr. Hartwell, emphasizing Ross and Mercier, looks upon muscular control as ranging from the fundamental muscles, through the intermediate to the accessory; that is, from the large muscles of the trunk, and those which attach the limbs to the trunk, and which were earliest to develop in the biological series, to the muscles of articulation, of finer manipulation, etc., which were later to develop. We do not think that either of these theories covers the particular phase of muscular control involved in finished work. Whether the co-ordinations be racially old or new; whether the muscles involved be fundamental, intermediate or accessory, the co-ordination goes through this development from an approximate to an exact adjustment. It is a question of degree, not of the muscles involved or of the general character of the movement made. Generally speaking, then, the exact co-ordination is not mastered at the first effort, and a later, and distinct, and special effort is necessary for it.

Whether or not it is desirable to demand this amount of mental work from a gymnastic pupil would probably depend largely upon the age of the pupil and the objects sought for with the exercise. We believe that these different degrees of motor power, in a young pupil at least, mark stages of development from the vague and general to the definite and exact, which he goes through in all other powers of the mind and of the will. One cannot observe, over and over again, the mental responsiveness, the

power of concentration, the ability to think clearly and to answer questions in clear, intelligible language, possessed by classes of children capable of finished co-ordinations, and compare it with the mind wandering, the dull, irresponsible intellects of those who control only the gross adjustments, without believing that there is a close and vital relation between this motor ability and the mental acumen. It may not be a relation of cause and effect, as has been often stated; but we believe that both are expressions of the same plane, or level, or zone of development, and that each may help the other. To raise the child's power of thought and expression from the vague and general to the definite and exact is one aim of every other subject in the school curriculum. Such clarity and definiteness of thought power is one object of arithmetic, of manual training, of grammar, and of all other branches of English; and it is recognized as closely allied to the training of the will and character. Matthew Arnold, in speaking of Keats' remarkably clear thought, says: "Lucidity is in itself akin to character and to high and severe work."

When we exact good form and definite finish of execution in gymnastic work, we are using a degree of power in the pupil that is on a plane with this that is highest and best in his development. Such finish undoubtedly requires greater mental work on his part for its first mastery, and whether or not that is harmful to him we shall discuss later. It also means greater work for the teacher. Probably for both of these reasons an enormous amount of gymnastic work is never raised to the point of good form or finished execution. Work which lacks that finish may undoubtedly produce maximal effect upon the heart and lungs and general physiological processes; and for a great many pupils all of the time, and for all pupils some of the time, that may be the only result necessary from exercise; but it is doubtful if we yet fully appreciate the enormous significance which may lie in the training of motor ability to the point of finished execution. This is not to say that those of us who are working for good form in gymnastics do not appreciate that it has a close connection with good mentality and developed wills; and we have data, such as that of Wey and Seguin, proving the development of the abnormal mind through motor training; but we have not, that I know, any scientific data as to the relation between the normal mind and the power for finished muscular co-ordinations of gymnastics, as distinguished from the large, gross adjustments. This offers an interesting field for laboratory experiment.

We may, then, put the gross or general and vague adjustments down near the border line of the automatic, as they require comparatively little effort from the mind; the exact co-ordinations of good form may be placed higher in the scale. Whether an

exercise partake of one of these degrees of co-ordination or the other, once it is mastered, nature asserts one of her great economic functions and hands over the direction of these co-ordinations to the spinal cord. After that a nervous impulse, conscious or unconscious, is all that is necessary to start the exercise and the automatic centers take charge of how it is co-ordinated. It is to be noted, however, that as soon as co-ordinations are handed over to the automatic centers they have a great tendency, except in pupils of advanced motor education, to revert to large adjustments only, and to lose finished execution. We have probably all been surprised at some time in our experience to be told that some old, familiar exercise, which we thought we were performing perfectly, was being done inaccurately. A teacher must, to still get finished execution from pupils, by frequent admonitions and corrections lift the co-ordinations back to the plane of conscious attention, until these final adjustments shall become more thoroughly established.

#### VARIOUS FORMS IN WHICH GYMNASTIC EXERCISES MAY BE USED

New exercises once having been mastered, and the co-ordinations handed over to the automatic centers, there are possible three methods of repeating them. They may be repeated so that both the co-ordination of the muscles, and the nervous impulse that sets them in motion, are automatic; or the co-ordinations may be automatic and the impulse to movement a conscious volitional act of the will; or the automatic tendency may be wholly resisted and the co-ordinations and volitional effort both held to the plane of conscious effort.

#### WHOLLY AUTOMATIC EXERCISE—DRILLS

A large class of gymnastic work, in which many repetitions of an exercise, or a long series of exercises are taken without pause, tends to the wholly automatic. Drills may be taken as a type of such work, as dumb-bell drills, Indian club drills, free-hand drills, etc. The psychological work in such a series may be explained by Professor James's illustration for an habitual series of movements. This illustration is a zig-zag line, each section of which represents a movement which produces a sensation. "When a series is being learned, each sensation is the object of a separate perception by the mind. By it we test each movement—we hesitate, compare, choose, revoke, reject, etc., by intellectual means; and the order by which the next movement is discharged is an express order from the ideational cen-

ters after this deliberation has been gone through." "In action grown habitual, what instigates each new muscular contraction to take place in its appointed order, is not a thought or a perception, but the *sensation occasioned by the muscular contraction just finished.*" Then only the beginning and the end of the series may be matters of conscious attention.

To apply this to gymnastics: When exercises are repeated a usual number of times on one side of the body and then on the other, these repetitions may come to be made with a minimum of conscious effort or even with none after they are once started. When several exercises follow one another in an habitual order, as in drills, it is quite conceivable that even the change from one exercise to the next might be made while the mind was intently engaged upon something else. Many of us who have taught for years have such automatic material in our repertoires. It is therefore safe to make the general statement that long connected series of exercises, such as those in drills, if frequently repeated, tend to reduce the work entirely to the automatic level.

#### VALUE OF AUTOMATIC DRILLS

Here we have gymnastic exercise with a minimum of mental work. What can such exercise accomplish and what can it not do? Obviously it cannot master new co-ordinations or correct old ones, and is therefore useless for postural correction. Undoubtedly it can produce some of the effects upon the heart of the continuous work of exercises of speed or endurance. We believe, however, that as soon as conscious volition is withdrawn, the muscles tend to contract more feebly—the contractions do not reach a maximum limit as when one consciously puts force into them: the exercise becomes less vigorous. Lagrange, it will be remembered, noted this fact. It would be very valuable if the laboratory workers in physiology would ascertain for us if the effect of weak or partial contractions upon the heart, say in free-hand exercise, are not less than those of vigorous or maximal contractions. We are inclined to think that this question is not entirely covered by experiments as to the effect of external resistance upon heart action. It is also probable that when exercise reaches the automatic plane, the heart becomes inured to it and the effect is lessened. Empirical observation certainly would lead one to believe that automatic drills have less effect upon the heart than those in which volitional effort is exerted. Indeed, a good teacher of drill work, by vigorous example, and by admonition and urging, seeks continually to lift the work back to the level of conscious volition.

## PARTLY AUTOMATIC EXERCISE

Where such a method of leading drills is used as that just mentioned, it raises exercise from the automatic level to the middle plane, where the subconscious processes of co-ordination and initiative alternate with effort of the higher centers.

Types of this class of exercise are feats of strength or skill on fixed apparatus, or exercises to command, as in free-hand gymnastics; in short, any separate exercises in which the co-ordinations are familiar. When a distinct effort is made to put vigor into a well-known exercise it belongs to this class.

## CONSCIOUSLY DIRECTED MOVEMENTS

There is a method of command used in which not only each exercise, but each component movement, is made an object of distinct volition—a method whereby the co-ordinations of even very well known exercises are not allowed to be directed by the automatic centers. This analytical method places exercise at the farthest remove from automatism and makes an excessive demand upon the centers of conscious volition.

## RHYTHM—MUSIC

One other element common in gymnastic practice has so direct an influence upon these different psychological processes that it must be considered. This is the tendency of even rhythm, especially when reinforced with musical accompaniment, to reduce work to the automatic stage. It seems to us that this effect of rhythm is beyond dispute as regards what may be called normal rhythm. One reason why many repetitions of an exercise, or long series of exercises, as in drills, tend to the automatic, is because of the even rhythm in which they are generally taken. To break the time into uneven intervals, either by counts or commands, is to raise the work instantly to the plane of conscious effort. We wish, however, to advance this proposition: that the automatic tendency in rhythm or music for gymnastic exercise is related to *tempo*—the normal, fast, or slow time in which it is taken. Each individual has a natural or normal rhythm; for one person time would seem to be very slow which for another would seem quite rapid; yet for a large number of persons taken together there is an average which may be called the normal rhythm. Let the orchestra play too fast or too slow, and the dancers complain. We believe that the rhythms which may be called normal in time, those which are easiest and most natural for the largest number, are the ones which have the greatest tendency to automatism, and that by quickening or

slowing the time psychological changes are involved. It would seem that in quickening the time, as in jig steps, or in rapid drills, co-ordinations become more surely automatic, but volitional effort has to be increased beyond the limits of automatism for all save the few who may become inured to it. We know one gymnastic teacher who exhausts her pupils by the rapid time in which she takes all exercises, irrespective of the pupils' nervous condition and irrespective of whether or not they know the exercises so thoroughly as to render the co-ordinations automatic and rapid. On the other hand, if the time be made slower than the normal, as in long, stretching, æsthetic gymnastics, we believe that both the impulse to movement and the co-ordinations are of necessity raised to the plane of conscious attention. This slow time is at first very fatiguing, but eventually becomes soothing in its effect. The slow work would seem to be favorable to the changing of co-ordinations required by corrective gymnastics, and experience has shown its efficacy for that purpose. We believe that this form of exercise—the æsthetic stretching movements—is emerging from the sentimental, unscientific and faddish atmosphere in which it was first introduced to us, and that it will come to be valued more widely for some pupils as one of the most useful agencies for corrective work, aside from its æsthetic values.

#### IS MENTAL WORK IN GYMNASTICS NECESSARILY FATIGUING?

We take issue with the proposition that wholly automatic exercise is restful to the mind, because it gives "complete repose of the brain," and "absolute inaction of the psychical faculties." The fact is, that such a mental state is psychologically impossible. At no time during life, sleeping or waking, at work or at play, is the mind absolutely inactive; the attention must fasten upon something during all waking hours. Wholly automatic exercise leaves the mind free to wander back to the subjects which have tired it and so loses its power for mental recuperation.

We believe the crux of the entire subject of mental activity in gymnastic work lies, not in whether or not the mind shall be employed upon the exercise, but in the way in which it is employed and the character of the attention demanded of it. This brings us to one of the great battlefields of pedagogy. If the interest in what is being done be so great that attention is involuntary, then fatigue from this element could be no more harmful than in play, for even in play the mind is intently concentrated. If, on the other hand, gymnastics demand voluntary attention, which requires an effort of the will to hold it to the subject in hand, that effort may become an element of harmful fatigue. This is generally the kind of attention required for con-



scious co-ordinations, or the kind of work in which an automatic tendency is resisted. The circumstances of gymnastic exercise offer no occupation for the mind, except various phases of the exercise itself, as do walking or rowing, or other outdoor activities of an automatic character. To eliminate the attention, therefore, from all phases of the body's activity is to reduce the mind to the necessity of vacant wandering, to cultivate habits of careless, unfinished and half-hearted work, with their demoralizing effect upon character, and, in school classes, at least, to put a premium upon disorder. Pupils do not enjoy such work; the teachers who have the most enthusiastic following will be found every time to be those whose work is of the thorough, forceful kind that demands and holds attention.

#### CONCLUSIONS

It is apparent that vigor in gymnastic exercise, the mastering of new co-ordinations (especially of the finer adjustments and of corrective work) require the conscious co-operation of the brain; and on the other hand, that automatic work, done without such attention and effort, while it may produce some effect upon the heart, is comparatively weak in execution, continues old habits of co-ordination, and, save in exceptional instances, lacks the definite finish which marks motor work on a plane of mind where dwells power of definite thought and developed wills.

Applying this to some phases of gymnastic exercise, it would appear that in the learning of new exercises the methods that partake of automatism—imitation and objective effort—may reduce the fatigue incident to the artificial process of consciously mastering new co-ordinations. The changed co-ordinations of corrective work, however, may probably never be achieved without conscious effort, though certain methods of teaching may render them easier of acquirement than others.

For most pupils, any new exercise, however taught, is at first performed only in its gross or general features which are near to the plane of automatism and which receive comparatively little conscious attention. The fine adjustments of correct or finished form require conscious effort on the part of the pupil. The psychological value of exact co-ordinations may be placed very high. Their physiological and corrective value is equally high.

After exercises are "learned"—i. e., after the co-ordinations have become easy, rapid and automatic—the nervous impulse needed to inaugurate the movements may be a matter of conscious effort, as in separate exercises on fixed apparatus or to commands; or it may be unconscious or automatic, as in automatic drills.

The tendency of the automatic process being to reduce both the

vigor of muscular contraction and the extent of the movements, to continue old co-ordinations, and to reduce new ones to the gross adjustments only, we may say of the wholly automatic drill that while it may stimulate the circulation and respiration, it will do these in a slighter degree than methods that call for volitional effort; and that it is wholly inadequate for corrective work as it continues old co-ordinations. Drills, however, need not of necessity be automatic. A teacher may, by comment, correction, suggestion, and urging, continually lift the work back to a plane of conscious effort, where it may become both vigorous and corrective. What a drill accomplishes, therefore, may depend upon the way in which it is conducted. The correction, urging and effort require so much of a teacher, and the elements in a drill that tend to automatism are so strong, that the chances are against its having the vigor or accuracy of separate exercises.

Any kind of work, as in analytical methods of execution, in which well known co-ordinations are not allowed to be governed by the automatic centers, makes an unnecessary, excessive and fatiguing demand upon the conscious centers of the brain.

Music as an accompaniment to gymnastic exercise favors automatism, if in normal *tempo*, and automatic co-ordinations only if in rapid *tempo*. Very slow time lifts the entire work to the plane of conscious attention and is favorable to the correction of co-ordinations.

We believe that mental work in gymnastic exercise is necessary for vigor and accuracy of execution and for the pupil's interest in, and enjoyment of, the work; we believe that the proportion which this mental work shall bear to physical activity is dependent upon methods of teaching and adapting exercise, which may reduce it to a minimum, or raise it to a maximum, or vary and mingle these extremes in a happy medium; and we believe that complete automatism, while it has some utility for gymnastic purposes, is there possible only within very narrow limits, and ranks low as a mode of gymnastic exercise. We have endeavored to show, however, that it furnishes a standard by which to judge of the amount of mental work in some of the most important methods of gymnastic procedure.

## THE INFLUENCE OF MUSCULAR WORK ON THE RATE OF THE PULSE.

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The earliest recorded observation of the influence of muscular work on the pulse rate was made by Bryan Robinson in 1732. Robinson counted a man's pulse while at rest, and then after walking and running, and reported 150 per minute as the maximum pulse rate. For more than a century and a half after Robinson's investigation the subject received little attention, but since 1892 several extensive and careful studies of the after-effect of work upon the pulse rate have been published. The method usually employed has been to record a pulse curve as soon as possible after the work ceased. From observations made while examining the men in my gymnasium I became impressed several years ago with the fact that this method not only failed to give the maximum pulse rate resulting from the work, but that it gave no information whatever as to the changes occurring during the work. This suggested the desirability of studying the pulse while the work is going on, and the present research is the result of a series of attempts to carry out this thought.

To record a pulse curve that shall not be made illegible by movements of the body, an open tambour is placed against the neck over the carotid artery, fastened in place with a U-shaped spring, and connected by rubber tubing with a small recording tambour. A form of work is chosen in which the neck can be held comparatively still. Thus far the work has been limited to tapping a telegraph key, lifting, running a foot-power lathe, and driving a stationary bicycle. To determine the pulse rate accurately a magnetic signal is made to record the time immediately below the pulse curve, sometimes in seconds and sometimes in 50ths of a second. A second magnetic signal placed below the first records the movements made in performing the work. In all about one hundred different experiments have been made on 30 different subjects. Further details of apparatus and method will be omitted, as they have been published elsewhere.<sup>1</sup> Of the many points of interest brought out by these experiments, time will permit me to discuss but two.

The first of these is the promptness with which the heart quickens its rate when one begins to work. To find out how soon the change occurs 35 experiments were made on 14 subjects. Tapping a key was used to test the effect of the lightest work,



FIG. 1. Curve of pulse rate, showing the effect of tapping a key rapidly. Plotted from the average of fourteen cases. Arrows indicate the time of beginning and stopping work.



FIG. 2. Curve of pulse rate, showing the effect of five minutes of vigorous work on a bicycle. *M*, mount; arrows indicate time of beginning and stopping work.

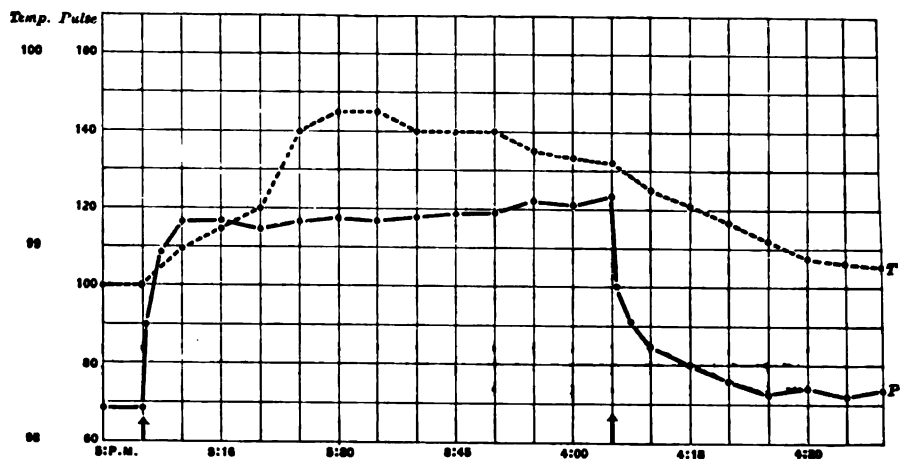


FIG. 3. Changes in pulse rate and temperature of the body during a bicycle ride of one hour and during rest for the half-hour following. The solid line (*P*) indicates the pulse rate and the broken line (*T*) the temperature. Arrows indicate the beginning and end of the work.

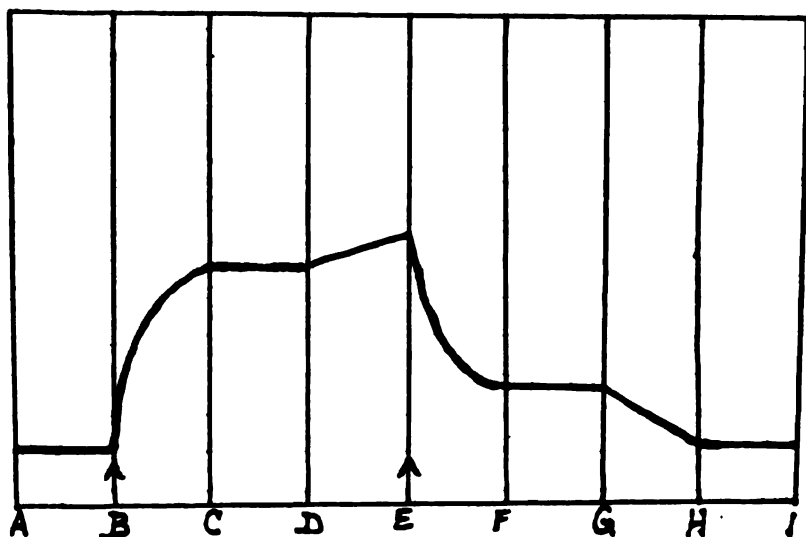


FIG. 4. Diagrammatic curve of pulse rate as influenced by muscular work. *AB*, normal rate; *BE*, period of work; *EH*, period of recovery.

and the bicycle was driven for more vigorous exercise. Although differing in many respects the results agreed without exception in one particular; the next pulse beat after the work began showed unmistakable quickening in every instance. Averaging the length of the pulse wave in 100ths of a second (as found in the different experiments), for the eight beats nearest the time of beginning the work gives the following figures: 82.3—83.0—83.4—84.8—84.2\*—78.6—73.7—69.4. The star marks the beat during which the work was begun. We notice a practically uniform rate until we come to the next beat after the work begins, and then there is a marked change, amounting to nearly 18 per cent. in the next three beats.

The other point to which I will ask your attention is the manner in which the pulse rate changes during the progress of a uniform piece of work. To study the question about 50 experiments have been made on 15 subjects, using the key, lathe and bicycle. The pulse rate was determined for each consecutive period of ten seconds, beginning about one minute before starting the work and continuing until several minutes after it stopped. The curve of Fig. 1 shows the average pulse rates of 14 experiments in tapping the key at the utmost speed. There are to be noticed here (1) an abrupt increase of the pulse rate when work began, (2) a practically uniform rate during the progress of the work, and (3) a sudden return to the normal rate on stopping. Fig. 2 shows the curve obtained from a case of more vigorous bicycle work. We have again the abrupt rise at the start, but the plateau is soon changed to a secondary rise of the curve, slower than the first rise, but continuing to the end of the work. The same abrupt fall occurs on stopping, but, instead of falling to the normal level, as in case of the light work, there is a brief plateau at some height above the normal, and then a slow secondary fall. To find out more conclusively whether the plateau actually occurs in cases where there is a secondary increase, or whether the latter is only a continuation of the primary change, several experiments were made in which the work was continued for an hour. Fig. 3 gives the curve obtained in one of these cases. We see here all the stages noticed before, the plateau lasting for 10 or 15 minutes with no perceptible sign of further change of rate, and then there begins a slow but unmistakable rise which lasts until the work ceases. It is interesting in this connection to note that in the tables of results given by Staehelin,<sup>2</sup> who has studied the period after work more extensively than anyone else, the two periods of fall with the intervening plateau can be plainly seen in the great proportion of cases, although he makes no mention of the fact himself.

The different changes in the pulse rate that have been found

in these experiments to result from the performance of muscular work can be conveniently summarized in a diagrammatic curve, such as the one shown in Fig. 4. First we have the sudden and rapid primary rise (BC) of pulse rate, beginning in less than one second after the beginning of the work, with the most rapid change at the very start. The promptness and rapidity of this change signify very much, it seems to me, with regard to the physiological processes which produce the change. It is evident that instead of the heart being stimulated to more vigorous action by the changed composition of the blood reaching it from the muscles, as we have been wont to suppose, the organism in some way anticipates the need soon to be realized, and the mechanism governing the heartbeat is instantly adjusted to the changed conditions. By the time the first drop of blood bearing the waste products from the working muscles can reach the tissues of the heart, in order to influence its rate, the rate may already be double the normal. Of all the physiological processes which have ever been held to cause the increased pulse rate accompanying the exercise, the inhibition of the inhibitory center by nervous impulses arising in direct connection with the performance of the voluntary movements is the only one acting quickly enough to account for the change that regularly takes place.

As indicated in the diagrammatic curve of Fig. 4, the primary rise gradually becomes less abrupt until it merges into a level plateau (CD). Here we have a period of adjustment, with a normal working heart rate instead of a normal resting rate. Just as a change from sitting to standing causes a change of adjustment so as to give a faster pulse, exactly so, it seems, does the mechanism governing the heart adjust the rate of its beat to meet the conditions of light work, and with a constant amount of work the same rate may be maintained for hours, subject to the minor changes seen in the pulse when at rest.

With more vigorous work the plateau is followed by a secondary rise in the pulse rate (DE), and with the most violent work this may come so soon that it may not be certain that a plateau intervenes. As to the cause of this second rise nothing can be said with certainty. It is probable that the processes maintaining the pulse rate of the plateau still continue, and that added rise is due to something of another character—to some cause not acting before. Vasomotor changes or waste products may be responsible for it. I was not able to find it related to either increase in respiratory movements or rise in temperature of the body.

Upon cessation of the work we have three stages in the return to the normal pulse rate which correspond well with the three stages of its rise. The primary fall (EF), being prompt, rapid, and of about the same extent and character as the primary rise,

may reasonably be attributed to the cessation of the influences producing the rise—that is, to readjustment of the governing mechanism to normal conditions. The secondary fall (GH), resembling in extent and character the secondary rise, is probably due to the gradual subsidence of the causes of the latter. The occurrence of a plateau (FG) between the two stages of the fall indicates that the causes of the latter stage are slow to act.

The promptness and rapidity of the changes in pulse rate at the beginning and end of a period of muscular work emphasize the importance of studying this question while the work is in actual progress, and largely account for the low estimate usually given of the maximum rate of the pulse resulting from work. In one case I found a pulse rate of 180, in three cases over 160, and in more than a dozen cases over 150, the latter rate being reached with work of a moderate degree of vigor.

Several writers have attempted to discover what is the fastest pulse rate that may be reached as a result of exercise without danger of injuring a sound heart.<sup>3</sup> It seems to me that before any such rate can be found we must learn more as to what a rapid pulse rate signifies. The amount of work the heart has to do depends not only on the rate of its beat but also upon the blood pressure against it has to work. The injuries of the heart resulting from excessive work are mostly from dilatation of the heart, which a fast rate of beat may tend to prevent. Dehio<sup>4</sup> finds that with a fixed quantity of work younger subjects have the faster pulse, while older subjects show more tendency to dilatation of the heart. In the experiments of Zuntz and Schumburg<sup>5</sup> the man with the fastest pulse showed least tendency to dilatation. Is the fact that children have faster pulse rates one reason why they are able to run so incessantly without harm? I know of no evidence to show that a rapid pulse resulting from exercise is either any source of harm in itself or reliable indication of a danger line. Especially is this true when the pulse is counted after the cessation of the exercise, for the pulse slows so rapidly that a difference of a few seconds in the time of counting will in any case give a widely different result. It was also observed during the experiments of this series that the recover of the normal rate after exercise depends largely on the position of the body and completeness of rest—the rate falling most rapidly when the subject lies at full length and relaxes completely. Walking or making mild arm movements causes the rapid pulse to be maintained to a marked extent.

It seems fair to conclude, therefore, that a pulse rate obtained by counting after exercise has ceased signifies but little as to the actual rate caused by the work, and that even for purpose of comparing different cases with a count is worthless unless the



count is made after exactly the same period of delay in each case and the subject is placed in exactly the same position and assumes the same degree of relaxation and repose.

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PHYSICAL EXAMINATION IN NORMAL SCHOOLS  
AND PUBLIC SCHOOLS.

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Anthropometric problems in normal schools and public schools do not vary, in their main features, from those met in other educational institutions, and yet, the purpose of these schools, the age of students, character of programmes, customs and traditions encountered demand some special adaptation before perfect adjustment can be secured and the best plans adopted.

I do not feel myself fitted, nor have I any desire, at this time, to consider seriatim the various items of a physical examination programme suitable for such schools, but shall content myself rather with noticing certain features which seem to me of importance. As these are somewhat general in character, it will involve the discussion of some of the principles underlying the whole subject of physical measurements and tests.

Broadly speaking, we may say that in the public schools attention must focus about those questions which determine and influence rates of growth and especially those transition periods of second dentition and puberty. No period of a child's life is unimportant and doubtless there are nascent periods of great significance which we have not yet learned to discern; but these we know mark important epochs, periods of accelerated growth and vital changes that are likely to induce perturbed states of the nervous system that cannot without danger be disregarded. It is during these periods that marked constitutional tendencies (diatheses), both mental and physical, manifest themselves with greatest frequency and exhibit the most violence. I do not hold with some extremists that such periods are necessarily attended with abnormal conditions, but I do contend that these are apt to be times of stress, of increased susceptibility that warrant teacher and parent in exercising greater caution than usual.

I would say, then, still speaking broadly, that the first and last years of public school life were relatively the most important from the anthropometric, pedagogical and medical standpoint. I believe that any tests which give us facts concerning the growth rate and the leading mental and physical changes of the very *first year* of school life are of the utmost importance. The problems presented by the normal schools while of the same nature require emphasis in other directions. They concern chiefly influences and tendencies which affect the period of adolescence

and more especially the middle and later adolescent periods. These are times of diminished growth but of important maturing and welding processes. We may now expect, and should secure, an amount of co-operation on the part of our subjects which we have no reason to expect during public school ages. The whole attitude of our student is, or should be, changed, so that it is no longer simply a matter affecting their personal condition and welfare, but assumes certain professional aspects which necessitates a more detailed treatment, both in its practical and theoretical nature. I think it was confidently expected by the pioneers of anthropometry in this country, that its introduction into our schools and colleges would so illumine our pedagogical insight, rationalize and unify our methods, and correlate the programme as to render over-pressure and neglect of physical factors, an improbability in the future. But it is to be feared that no such results were generally attained; indeed, in many quarters it so operated as to increase the antagonisms or accentuate differences already existing concerning the relative importance of the mental and physical in education. This was largely due to placing undue emphasis upon mere brawn, bringing into unwarranted prominence the gross muscular tests, the supreme value of bodily symmetry and multiplication of such girths of the extremities as knee, ankle, instep, elbow, wrist, etc. An exaggerated value was set upon muscular bulk as indicating vital conditions.

It is not to be denied that all these tests have some value, but the question which presses for answer is: Do they reveal vital facts and put us in possession of that fundamental knowledge which is so much needed to answer the urgent questions which fairly overwhelm the teacher and parent?

If we seek the real reasons which form the basis of our physical tests, we will find that it is primarily to determine the fitness of the organism to meet the needs of the world, to estimate the amount of work we may legitimately impose upon that most complex and easily disturbed of all mechanisms, the human machine. There has also arisen a well-founded conviction that mental efficiency must have for its foundation physical integrity, and lacking this, mental training becomes difficult and often injurious. Individual cases will always occur which seem to disprove the physical basis of mental efficiency, but the law must ever stand as irrefutable. This is only another way of insisting on man's unity and emphasizing the fact that every substantial step in education has, on the practical side, obscured the line of demarcation between the mental and the physical, and enforced their interdependence.

It is only fair to state that my experience in public school

measurements has been rather limited, and I cannot, therefore, claim to speak with much authority concerning this phase of my subject.

The normal school being a professional institution, the work must here assume certain technical aspects in this department also. To be sure, there has not been much demand for equipment in the physical training field in the public normal schools and in consequence, this department, in the normal school, has usually been content to look after the physical condition of the student during his period of school life with little or no thought of preparing him for any definite teaching of this branch. But this is being rapidly changed and it is quite in line with the modern trend that some rudimentary information in anthropometry be furnished. If this is done for a few years in all our normal schools it will do much to solve the problems of anthropometry in the public schools, since there is little prospect that the measurements will, in most instances, be taken by any one but the regular teachers. The conditions which confront the anthropometrists in this field relate, then, first to economy of time, and this means that the tests and measurements must be few in number though comprehensive in character; they must tell the fullest story in the fewest possible terms. Where the questions involved are so large and the means at command so small it is not likely there will be unanimity of opinion as to the exact tests which will best serve these purposes. There are a few, however, so fundamental as to quite generally commend themselves.

Next to the number of tests, come simplicity and practicability, only such as through facility and ease of comprehension readily commend themselves to the untrained, are permissible.

The questions relating to growth and development, the amount of mental and physical work to be imposed, detection and prevention of deformities and disease tendencies, constitute the chief problems. Because of the rapid changes during these periods of childhood and youth, the leading facts are, in the main, not difficult to observe, and may be determined by a comparatively few tests. Accuracy is of course indispensable to correct results, but there is not demanded the same nicety of detail or complexity of plan required in normal school measurements.

Sufficient accuracy, for our present requirements, may be secured if the tests are taken with the clothing on and by the regular teacher, after brief preliminary explanations and cautions from the physical director. I can see no reason why these may not be taken at least twice a year in all cases, and oftener in those demanding special care. My own experience, though small, tends to show that a lively interest is awakened among the parents

and children, while I have generally found teachers willing to co-operate and careful in taking the tests when the purpose is fully understood.

The following are those which I used in my brief experience in public school work:

Weight.

Height, standing and sitting.

Girth of chest, normal, expanded, contracted.

Girth of waist.

Depth of chest, normal.

Lung capacity.

Strength of back, legs.

Strength of forearm, R. L.

Heart rate, sitting and after exercise.

Vision and hearing.

These were taken a number of years ago, and I do not now consider the selection the best. Should I again be in position to take public school measurements, I would adopt the list used by Dr. Wm. Hastings, which is as follows:

Weight.

Height, standing and sitting.

Span of arms.

Breadth—head, chest, waist.

Depth—chest.

Girth—head.

Lung capacity.

Chest expansion.

Strength of forearm, R. L.

This includes thirteen tests and measurements, none of which are difficult or complicated and yet are such as to represent growth and vitality. I am not certain that the reach or span of arms is in all respects as representative as the others.

The emphasis on trunk lengths and breadths I believe to be exceedingly important, while the elimination of the customary girths and lengths of the extremities is most wise. I find it very difficult to speak in terms of moderation of the splendid work accomplished by Dr. Hastings in this field. His manual will prove a godsend to physical directors, public school teachers and others interested in anthropometry. It contains such a fund of valuable matter as has not before been collected in a single volume. His anthropometric tables certainly do, to use a well-worn but still expressive phrase, "meet a long-felt want." The collection of data and construction of tables for the determination of normal standards of development for all heights of each age is a splendid piece of work for which too much credit cannot be given.

I am inclined to think that it would have been wise to include

eye and ear tests in the same examination. Reaction time and psychological tests generally, while of great importance, ought, it seems to me, to be subordinated to those indicating the basal facts relative to growth and development, and especially such as evidence functional activity of the vital organs. Space should, however, always be left on the card to note any marked peculiarity or abnormality, whether mental or physical.

I favor rather a full family and individual history, even for public school purposes. Since this is filled out by parents it need not increase the teacher's work. No feature of the examination is so important as the physical diagnosis, and it is to be regretted that this cannot be more carefully looked after. The teacher may, with a little experience and some help from the physical director, learn to detect the more apparent abnormalities and disease tendencies. Even though these cannot be at all differentiated, I am convinced that there are certain well marked symptoms of a prodromal character which may quite generally be noted long before the real advent of many of the severer constitutional maladies. It is a matter of great moment that the director or physician have his attention called to such signs.

The limits of this paper forbid any further consideration of public school measurements even though the question has been so poorly covered. After twelve years experience in the use of the full list of measurements and tests accredited by the A. A. A. P. E., it seemed to the writer and his associates that the time was ripe for a radical change in our system. This was no sudden conviction, but the outgrowth of a lingering feeling of dissatisfaction which had haunted us for years, a consciousness that much valuable time was being expended in taking measurements and tests which failed to give homogeneous results, to furnish vital pictures. Reluctance to break away from the most generally accepted standard in this country arose largely from the belief that to inaugurate independent methods was to isolate ourselves, anthropometrically speaking, and to render difficult and impossible any comparison and correlation of results with similar institutions.

During a visit to the Y. M. C. A. Training School at Springfield, Mass., in 1901, the writer had the first opportunity of examining somewhat in detail the work which Dr. Hastings had been doing, and at once decided that the beginning of the next school year should mark the advent of a new system at our school. Accordingly the new system was instituted and is now in regular use.

Our old programme comprised some sixty-eight items, exclusive of history, sensory tests, etc. The new one contains nineteen "vital" tests and measurements, including all that are really of fundamental concern; but for convenience and to meet a de-

mand for fuller tests when desired, an equal number are added under the head of "special" tests and measurements. The same style and size of card is used for both sexes with only the change of a few items to adapt them to the varying requirements.

In our school the young women outnumber the young men about three to one, thus making the burden of work among them much greater. Owing to this fact, only the vital tests are given. Thus far both vital and special tests have been taken among the young men, but even then there is only a little more than half the number of items formerly taken. This saving of time has greatly facilitated the examinations, and what is of far greater importance, has given us vastly better results, since our whole view point is altered so that the emphasis has been shifted to different and, we believe, to the more important phases of the work. More time can now be devoted to the physical diagnosis and to special corrective work, thus putting us in closer touch with our students and enabling us to more fully consider their individual needs. We greatly value this opportunity for more personal contact and find that it enlarges our sphere of usefulness. Without in the least minimizing the value of statistical anthropometry and the scientific results which have accrued from its study, I am constrained to urge the importance of this personal influence and direct method of ascertaining and meeting the students' needs. This is of special value in normal school work for more than personal reasons, since it puts the future teacher in position to confer similar benefits upon their own students when they enter their profession.

A fuller history is secured, and this without taking time during the examining period, by including the history blank on the reverse side of the appointment card, and having it filled out by the student at his leisure.

The card system is now used in place of the record books, thereby rendering tabulation of results according to various standards a much simpler matter.

This system is already in use in some other normal schools. The card for measurements and tests and physical diagnosis is designated by Dr. Hastings as "form J." The appointment and history card is known as "form K."

This system will, I am sure, be the beginning of a new movement in anthropometry in public and normal schools and will mark the disappearance of the old standards. The importance formerly attached to muscle girths and bone lengths will, I believe, be transferred to vital measurements. It may fairly be assumed, barring accident or congenital deformity, that the girths and condition of the extremities will approximate the normal if the trunk measurements and tests have been found normal. Attention must centre more directly upon the trunk and its viscera.

If the nutritive conditions are natural, the great vegetative processes proceeding in rhythmic and orderly manner, girths of the extremities need give us little concern. I would not have us wholly disregard the questions of physical symmetry nor yet girths and muscular strength. Circumferences, lifting, pulling and pushing power, ability to withstand endurance tests, or to exhibit feats of skill and agility are no mean possessions, but they must not be confused with or ranked as paramount to the more important questions of *vital strength*, organic stamina and disease-resisting powers. These larger facts are often found wholly disassociated from generous proportions or great muscular strength. Such possessions are determined far more by perfect blood making and distributing functions, by family and individual history and physical diagnosis than by muscular ability and physical dimensions.

These are generally rated as uncertain quantities and incommensurable by the use of tape, calipers and dynamometer; they are, nevertheless, supremely important and quite as definitely determinable by proper methods as are the features generally so much emphasized.

As an outgrowth of this mistaken emphasis on bulk and muscular strength, there grew up, as a natural consequence, a whole train of artificial, cut and dried forms of exercise—prescription gymnastics—which, though useful and often indispensable for corrective purposes, are, when relied upon exclusively and practiced for months or years, in the overheated and often foul air of the gymnasium, the veriest caricature on real physical training. I am sure that we are now working away from this old idea of developing isolated muscle groups. Fortunately it was only in exceptional cases that sufficient enthusiasm was aroused to make these really dangerous. It operated indirectly, however, to discredit the valuable corrective features and doubtless often retarded the introduction of more rational methods.

Dr. Hastings, in speaking of the change which is going on in these directions, has well characterized the whole movement in these words: The general trend of this change in the character of exercise has been from developmental to hygienic work, from the pursuit of muscular symmetry to the pursuit of health and vitality; and in the same connection, he remarks: It was assumed that symmetry of bone lengths and muscle girths was equivalent to physical perfection, the guarantee of normal function; that the outside indicates what is inside; that asymmetry is a species of disease.

The newer thought subordinates symmetry and muscular strength to general organic proportion and visceral capacity. In place of striving to bring the individual up to an arbitrary standard, it seeks only to develop him to his natural capacity regardless



of artificially determined standards. When *vital* standards are employed we will cease to exalt the forms of "freak" development so prominent in the past. Nutritive conditions, metabolic processes will be considered first.

It is not to be expected that these changes in anthropometry will alone bring about this much-to-be-desired state, but it will prove one of the most powerful factors, and the normal and public school offer the most fruitful fields.

In order not to prolong my paper beyond the limits assigned, I will not attempt further details, but conclude by briefly summarizing the leading thoughts I desire to bring out:

#### PUBLIC SCHOOLS.

1. The regular programme must be as little interfered with as possible, since the introduction of new subjects always arouses opposition; therefore, in the beginning at least, disturb the existing curriculum as little as may be.

2. The list of measurements and tests should be few in number, simple in character, and such as to indicate vital capacity rather than gross muscular strength and symmetry. This does not imply the neglect of strength and symmetry, but only their subordination to more vital needs.

3. The problems of growth and the recognition of the important nascent periods are here of chief importance. Rates of growth and the proper evolution of the epochal periods are valuable indices of the physical and mental condition of the child, and as such, should be carefully watched.

4. The aim should be hygienic and prophylactic rather than therapeutic, hence the importance of recognizing diathesis or disease tendencies.

5. The data procured should be applied to the betterment of the school and home conditions and redound directly to the individual benefit of the pupils.

#### NORMAL SCHOOLS.

1. Physical training and anthropometry must be made co-ordinate branches of the curriculum and allotted time commensurate with their importance.

2. The list of measurements and tests must be more comprehensive and relate primarily to development and adolescent needs.

3. The whole subject must be treated from a professional standpoint and instruction given concerning the underlying principles of growth and development.

4. The statistical features of anthropometry should be subordinated to the individualistic, and the data furnished utilized for the direct and immediate needs of the students.

5. All tests should seek first to determine the great organic needs, and in connection with the family and personal history reveal latent and precursory disease tendencies.

## SOME ANTHROPOMETRIC DATA OF WESTERN COLLEGE GIRLS.

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So much time and labor is being spent on Anthropometric observations in our different colleges that we are often asked, Does it pay, and does it lead to any valuable results?

Those of us who are more directly interested in this subject probably consider it as important in the results it brings us as any other part of our work. In fact, there are so many valuable things to be learned from these Anthropometric observations that they are claiming the attention of investigators, men in other professions, anthropologists, philologists, psychologists and medical men alike, who come to us for this data which they wish to make use of in their particular lines of investigation. We are better able, however, to recognize the significance of Anthropometry to the medical man. Men of every profession are striving for exactness in their work, and the medical man oftentimes uses these measurements for the purpose of detecting certain tendencies in the growth of children, or certain weaknesses which may not be noticeable in the individual, but which might be quite apparent in a group. There are many subjects open for investigation in this one science, and we are but at the beginning.

Before presenting the data concerning the Western college girl, or making any comparison, let us consider a few points which undoubtedly have had their influence upon these measurements. We are often asked, "Does environment have much effect upon the growth of an individual?" If figures are to be trusted it is undoubtedly certain that it does. First, let us consider one of the things which has a great influence upon growth and development, that is, climate. The data which will be presented includes the measurement of 1,500 girls west of the Mississippi, 75% of these being born in Nebraska and Iowa. It is a generally understood fact that the greater the altitude, the more stimulating, especially to the nervous system and circulatory organs. Although the altitude of this part of the West is not excessive—being only 1,300 feet—yet its remoteness from any large body of water makes its climate exceptionally dry and invigorating. With this there is an unusual amount of sunshine, a cloudy day being an exception. These climatic conditions have their direct effect upon the nerves and respiratory organs. These in turn influence the development of the individual. The Western "push," as it is called, may be attributed largely to these climatic conditions. The nervous system is receiving constant stimulation from these

sources, and with some persons there is an almost abnormal activity and a desire to "rush along." Add to this the influence of the winds which generally prevail over this prairie country, and the result is, in most cases, extreme nervousness, in consequence of which there is little chance for the storing away of much fatty tissue, a thing that is true of the people in the more Southern and Eastern States, where life is taken more leisurely. The direct and indirect effect of these climatic conditions upon the lungs is very noticeable, as will be seen later. The small percent of humidity in the air, combined with the slight increase of altitude, makes respiration freer and fuller. Then another point to consider is the outdoor life of most of these girls. The average Western college girl spends more time outdoors than does the Eastern girl, most of them coming from small towns. In this Western country the towns are more scattered than in the East, and in many places a mile or two is considered a short distance to walk to school. With this outdoor life and pure air there is generally plenty of good, wholesome food, the things which good health depends upon, and anything which promotes health promotes growth. When these same girls enter the University these conditions are changed but little. There are few of the Western universities that have dormitories, and in this particular institution the girls room anywhere from two blocks to two miles from their campus. So it may be seen that the Western girl, even after entering college, lives under conditions which favor healthy, physical development. There is little or no gymnastic work done before entering the university, so that it need not be taken into consideration in connection with these measurements.

It is my purpose to make a comparative study of the development of college in different sections of the country, to see just what differences in development are due to climatic conditions and environment. Unfortunately, the study must be more or less limited, owing to the lack of sufficient data from different sections. The only available data of this particular class of young women (that is, college women) so far has been a table including the measurements of Oberlin College girls; another of Wellesley College girls, and still another of girls from the University of Nebraska. I may mention some data which has been sent me of a group of college girls from Minnesota, and another group from California. Although there was not sufficient data from either of these States to prove anything, yet it was quite noticeable that there was a tendency towards greater height and larger proportions in both groups than in any of the college charts mentioned above. Until more complete data can be secured from these States I shall make the comparisons between the West and ex-

treme East. I shall take the Wellesley girls as typical of the East and the Nebraska girl as typical of that part of the West. Some have said that neither of these tables fairly represent the class of girls from that particular section of the country, as a large proportion of students from other sections is in attendance at these schools. Investigation shows that this is not a fact. The Wellesley catalogue, at the time of the publication of its anthropometric table, shows that 85% of all the students came from Massachusetts and neighboring States, while barely 3% come from all the States west of Ohio, and the remainder coming from the middle Atlantic States and the South. The same is true of the table representing the measurements of the Nebraska or Western girl—75% of these girls were born in Nebraska and Iowa, 15% in adjoining States, and remaining 10% coming to this country in childhood. The claim, too, that there is a large Teutonic element in the West, which would show itself in the physical characteristics of the Western girl, is rather doubtful. Although in many instances the names might indicate such ancestry, yet it is so remote that it might seem to have but little influence upon the stature and development of the children. An accurate record has been kept of the birthplace, not only of the girl, but also of each parent and grand parent; these records show that 22% of the parents of these girls were born in Illinois, 20% in Ohio, 18% in Pennsylvania, 17% in New York, and the remaining 23% coming from Indiana, Iowa, Wisconsin, Germany, Canada, England, Nebraska, Sweden, Massachusetts, Vermont. These States are enumerated in order of the percent. It is interesting to note that there were twice as many German fathers as mothers. Another noticeable peculiarity is in the stature of the children from these parents, the majority of them being considerably above the average girl in height. The percent of foreign grandparents is not much larger than that of parents. So we may say that the measurements on these two anthropometric tables fairly represent the type of college girl from these two sections of country. The measurements of the Nebraska chart represent those of the freshmen and sophomore classes. The average age being approximately 19.9 years, corresponding in age to the Eastern girl. Taking the average measurements of each table for comparison, we notice the first great difference is in weight, the Eastern girl being considerably heavier than the Western girl. The difference in climatic conditions and environments may now come up for consideration. As has been said, the altitude, dryness of air and the prevalence of winds account largely for the lack of fatty tissue. A more muscular, wiry constitution is suggested throughout all these measurements. The weight would very probably affect all the girths. We see the first great difference is in weight. The Eastern group are both heavier and taller than

the Western. In height, sitting, we find the long trunk, short leg type in the Western group, while the Eastern group seems to show the short trunk and long leg type. This latter type seems to be more characteristic of the American people than the former, while the long-trunk-short-leg type seems to be more characteristic of the Europeans. In bone measurements, such as in lengths of arms and arm reach, there is little or no difference between the Eastern and Western groups. The next difference we note is in length of foot. The Eastern girl seems to have a greater length of foot than the Western, although not so great an instep girth, showing a long, narrow foot rather than short and broad, as the Western girl's measurements seem to indicate. This short, broad foot seems to go with the short-legged type of the Western girl.

In girths we notice first the greater girth of head and neck of the Eastern group compared with the Western. Considering the fact that large head and neck girths go with large chest girths one would naturally expect to find the next measurements, namely, those of chest, also greater in the Eastern group, but here the reverse is found. The Western group far outclasses the Eastern group in all chest measurements. This would naturally indicate a greater vitality and greater endurance. In girth of waist and hips the Western group also excel, this probably being due to greater muscular development. It is quite noticeable that in all arm girths, with the exception of forearm measurements, the Eastern group are ahead. The more muscular built Western girl seems to show the effect of her outdoor life and environment by the increase in girth of her working muscles in the forearm. In girths where fatty tissue is more likely to accumulate the Eastern girl excels, but in most muscular girths, if they may be so called, the Western girl excels.

In breadths we notice the broadest head found in the West. This might indicate the slightest influence of the Teutonic element, otherwise it cannot be accounted for. In other breadths and depths the Eastern girl leads. When we come to the last measurement we see the large chest girths of the Western girl verified by the greater lung capacity, compared with that of the Eastern girl. These larger girths and lung capacities of the Western girl should prove, almost conclusively, her greater vitality and power of endurance compared with that of the Eastern girl. By making these comparisons we may clearly see that physical differences between college girls of different localities are due almost entirely to climatic conditions and to the life of the people, rather than to any racial peculiarities. These variations in the physical measurements of college girls will be more noticeable when we have data from the northern and western coast colleges.

## THE VALUE AND RELATION OF PHYSICAL EXERCISES TO METHODS FOR THE CURE OF STAMMERING AND STUTTERING.

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It is with much pleasure that I appear before the members of this association, an organization for the advancement of physical education. Years of study and observation of stammerers who in the course of time now number thousands, convince me that there is no other class of persons more in need of physical education. This very work which it is your aim to advance is of unspeakable value to those whose tongues are bridled. It has been proved that stammerers can do much to overcome their difficulties and alleviate their sufferings through the study of physical culture and the constant cultivation of their powers through right methods of physical exercise.

The value of physical exercises to methods for the cure of stammering is of recent recognition. For a quarter of a century only, have reputable authors on this subject advocated physical culture as an important factor in treatment. There is an extensive history of stammering previous to this period which shows that early investigators and teachers were quite at sea as regards the origin of the difficulty and the necessary means to correct speech. A recital of their theories, interesting as they may prove as curiosities, would be worthless for practical purposes. Their theories were poorly founded and the application of them visited disastrous results upon many a stammerer who was in far worse condition than before treatment.

Very ancient are the first observations made concerning stammering. Hippocrates, Aristotle and Galen wrote of speech defects. While to Satyrus, the Grecian actor, is attributed the cure of Demosthenes, who stammered. However, the generally accepted assertion that Demosthenes' cure was effected by speaking with pebbles in his mouth has no historical basis. But to that old Grecian actor, Satyrus, is due the honor of combatting stuttering and stammering by lessons in diction. Chervin, the modern French specialist, gives to Satyrus this credit. Moreover, Chervin says that modern science in the treatment of speech defects has found success in proportion to the nearness of its approach to the simple and natural methods transmitted to us by

the ancients. Chervin says that he has tried all systems of treatment without success, but that he relies mainly upon the education of the Will. In 1879 Cohen, the celebrated specialist of Vienna, reported forty cures by elocutionary and physical exercises. Gunther, the Principal of a deaf mute school in Germany, advocated both vocal and physical exercises. It is only fitting at this point to give special mention of Andrew Comstock—who as early as 1837 had done pioneer work in the teaching of stammerers. In 1827 this venerable and earnest instructor in elocution began work upon a method for the cure of stammering, being the first in this country to assert its possibility. He was a man philanthropic in disposition and eager to advance every cause that made for the betterment of mankind.

Later authorities, namely, Klencke, Werner, Howard, Butterfield, Bristowe, Shuldham, Kussmaul, Hammond, Zug, Potter, Bryant, Johnston and Mauken, have all recognized the value of breathing, vocal and physical exercises, as well as elocutionary drill for the purpose of eradicating the difficulty.

One writer has said that the entire treatment for a complete and permanent cure of stammering may be summed up in the following words:

First. The regulation of breathing in general and in the acquirement of deep breathing in particular.

Second. Exercises for the training, strengthening and proper control of the vocal organs.

Third. The maintaining of mind and body in the best possible condition.

Fourth. The greatest possible development of the faculty of concentration and attention.

Fifth. The strengthening of the will power.

To a certain extent the recognized methods and theories of these authorities are similar as to their acknowledgment that physical exercises are essentially valuable in the treatment of stammering. The principal difference in the results accomplished was due to the thoroughness with which such methods were systematized and employed. The importance of method must not be overlooked. One might be ever so well versed in the theory of treatment and yet without a clear and definite plan of procedure, he would be unable to discipline and control those whom he aimed to benefit.

At times discipline which exacts much of the pupil is necessary for his future good. When a pupil enters a school, entirely at sea as to correct speech, discouraged, nervous—even to illness, he must find chart and compass in the strong, rightly-directed will of his instructor. Only by doing implicitly what he is directed to do, will he have taken the first step in the right direction. At

all times, in the treatment of stammering and stuttering, the teacher has very much to contend with. To his work there are obstacles not met with in any other line of teaching. In order to attain the best results it is essential that the student have an unswerving faith in his method of treatment. Without implicit faith in the efficacy of the means brought to his aid, there is an unsurmountable barrier in the mind. Stammering comes from lack of confidence, and therefore a firmly established confidence in the efficacy of the instruction places the victory over speech defects so much nearer.

Skepticism and unbelief in the discipline to which pupils are necessarily subjected militates seriously against correct speech. That wavering uncertainty which is bred of incredulity is one of the greatest enemies of the stammerer.

Stammering has been defined in many different ways. Time and again it has been shown in cases of stammering that there is no organic defect whatever. It has been variously defined. Some say it is inability, under certain conditions, to control the muscular action of the organs of articulation. Another defines it as an affection of the vocal organs, causing a hesitation. The following shows the different ways of describing the trouble: A difficulty of utterance; a choking sensation and an impeded action of the vocal apparatus; the inability to form sound; a lock-jaw kind of gasping; a chronic spasm of the articulatory organs; the frequent repetition of sounds and syllables; a temporary inability to vocalize; a halting, defective utterance. In this manner I could go on giving definitions of stammering in hundreds of ways. But, after all these definitions are considered, one conclusion is deducted, and that is, stammering results from *lack of confidence*.

Whatever the cause, whether it be the result of deficient mental energy, or whether there is inability to coördinate thought and physical utterance or whether the difficulty is manifested in facial contortions, these points are not in the question. One thing we do know, persons who stammer lack confidence in their ability to speak. They are beset by constant rebuffs. They think they cannot speak, but try and find it possible. Again they start with assurance, only to be thwarted by lack of proper response from the organs of speech. In fact, they know not what the outcome of their attempt to speak will be. It is this uncertainty, this lack of surety that keeps them constantly in apprehension. This apprehension produces extreme nervousness, in the wake of which follow multitudes of speech difficulties. Therefore, as far as speech is concerned at least, the stammerer becomes a skeptic. He doubts his own ability, and quite naturally, because of his repeated failures previously, discredits the ability of others to free



him from his burden. His incredulity and skepticism have grown up naturally. He is depressed ineffably by his stammering. The more severe his case the less probable does it seem that he can be made speech free. He is always agonized under this humiliation. To be free—is too good to be true. He looks upon restored speech as does a man who has come into an inheritance. Until he is thoroughly convinced of its tangibility he is inclined to doubt his riches as real.

Within recent years, however, the feeling of doubt and skepticism among stammerers is disappearing, as a knowledge of the remarkable results accomplished by modern institutions for the treatment and cure of the malady have disseminated confidence. Three points of belief must be established in the mind of the pupil: First, that the instructions will lead to ultimate cure, that his instructors' chief aim is toward his highest good, and last, but of paramount importance, that he recognize in himself the ability to succeed.

He is now ready to face his work—to take the initiative step in his cure—submitting himself to discipline.

Stammerers as a class are willing to submit to reasonable discipline. However, there are occasionally found persons who seem reluctant to observe the necessary instructions. This is occasioned oftentimes by the fact that they have been more or less humored because of their infirmity.

Klencke, of Germany, who is recognized as the greatest European authority on stammering and stuttering, referring to the matter of inattention on the part of some stammerers, says:

"I have never neglected to impress upon stammerers and their relatives *with far more emphasis than their cases really demanded*, the necessity of their own co-operation, and although they would enthusiastically promise it, all stutterers begin treatment with the secret belief that they need only to follow the instructions in a passive and mechanical manner, that *they can take things easy*, and that they are not required to trouble themselves with mental activity and attention."

However, Klencke's methods were severe, and consequently his standard of criticism was very high. The conditions were then, as now, I believe from wide observation.

The stammerer lacks ability to control himself. His malady makes him nervous. He loses self-control and the power of discipline is sacrificed. Frequently we find a stammerer who lacks in strength of personality that persistency and purpose characteristic of those who achieve something in the world. His infirmity may be responsible for this, the impaired confidence manifesting itself in business and social relations. There are, however, exceptions to this general rule, but in the majority of cases

the lack of ability to control and to govern is a striking characteristic among stammerers.

Self-control in such cases is of more importance than the ability to control others.

Upon entering an institution the stammerer finds everything in connection with the treatment entirely new to him. Formerly he had his own way (except in his talking). Now he must submit entirely to the will of another. If he is prepared and willing to do this, an *absolute* and *permanent* cure for his affliction can be safely promised.

An essential factor now recognized in treatment by modern institutions is the "Silence Period," the ordinary length of which is one week. The first thought concerning this phase of the work would be, "Is it not so irksome and tedious as to become distasteful, disheartening the pupil even to homesickness and despondency?" No, not as a rule. The intelligent and thoroughly conscientious stammerer when presented with such a means to an end, is glad to do what will help to free him from his trouble. The nervous system in severe cases is well-nigh wrecked by years of struggle. Through no other means can so complete relaxation be brought to the nervous system as through silence. During this period the patient, relieved of every responsibility, his mind at rest, settles down to complete composure. *Silence*, however, does not debar him from the regular work of the institution. He is expected to conform to the requirements continuing his work regularly. The vocal work, breathing and physical exercises of the school, engage his mind daily. Only from conversation is he restricted. When the object of the silence period is not understood by the patient he is inclined to look askance at it. Those who do not believe in its efficacy also regard it curiously. But he whose mind is receptive to the greatest good for himself finds therein a period of rest and recuperation for the nervous system as well as a disciplining agent which promotes self-control.

The stammerer is not only enjoined not to speak conversationally during the silence period, but he gives his word to that effect, promising that he will keep it absolutely and to the best of his ability.

Deprived of the privilege of speech, there is an increasing desire for expression. This desire must be curbed. The natural thing is to respond when spoken to. Remembering his promise the student refrains from speech. A thousand times he meets the temptation to break his bond—and a thousand times he stands firm and silent. He is keeping his promise by the exercise of his will power, which is thereby being strengthened. Each victory is a link of strength in the chain of self-control, advancing him

farther and farther toward mastery in the situation. This is absolute control in that the speaking organs are under complete subjection.

Few of us, unless we have disciplined ourselves by a period of silence, realize how great is this desire to speak. To the stammerer this discipline is entirely new. The beneficial result of silence is shown by the fact that many subjected to the ordeal forget, when released from silence, that the term of their obligation is over. During silence the patient is allowed to write upon paper what he wished to say. Upon release from silence, the observable control which he has established is oftentimes remarkable. I have even known of a number of stammerers who were cured during the period of silence, no further difficulty having been experienced. Silence is, indeed, a remarkable factor in the treatment of stammering, and in every recognized method of cure we find the "silence period" incorporated.

#### THE VALUE OF BREATHING EXERCISES.\*

The value of breathing exercises in the treatment and cure of stammering and stuttering cannot be overestimated. However, persons who stammer do not thus suffer as the result of abnormal respiration. The abnormal conditions are the result of stammering rather than a cause. Few stammerers in the beginning suffer from faulty respiration, although such invariably accompanies stammering. In the beginning the breathing is natural, exactly as in normally speaking persons.

Stammering, it is noteworthy, seldom manifests itself until after the child has acquired articulate speech. In some cases gradually, and in others with marked suddenness, the condition of stammering asserts itself. The child, filled with fear, gasps for breath, strains every power to make its words intelligible, but without avail. Thus, from continual struggle, the normal habits of breathing become permanently deranged. The more violent the stammering the more seriously is respiration impaired. This radical derangement in turn increases the stammering until, in some severe cases, the result is a complete collapse.

While admitting that stammering is usually due to heredity, the stammerer is *made* not born, in that the condition may be aggravated through neglect or relieved by care and attention.

The question may arise as to the difference between the respiration of stammerers and the respiration of persons of normal speech. The stammerer, suffering because of his inability to speak, endures constantly great mental strain. This tax upon his energies causes him to speak on what may be termed "exhausted breath." This condition is explained thus: the great

\*These exercises were exemplified by pupils from the Lewis Phono-Metric Institute, about fifty in number, who attended the Convention.

effort to speak causes an expulsion of air from the lungs. The struggle produces a collapsing or inward movement in the diaphragmatic region where the last of the air supply is apparently squeezed out from the chest. His words, as a result, are broken, unintelligible utterances. One who stammers severely will tell you that a prolonged struggle to speak is followed by a cramped and exhausted feeling at the waist line in front below the point of the sternum. This condition results from abnormal breathing, and therefore the value and indispensability of breathing exercises is very patent.

Important as we find breathing exercises for the correction of exhausted breath, still greater is their purpose in the scheme of control.

Stammering is oftentimes manifested otherwise than in disconnected words. One phase in which it asserts itself is in an inability to speak. Stammering is the inability of the mind, under certain conditions, to control the muscles of the body—in other words, it is the inability to coördinate the mental desire with the physical execution of that desire. Stammering is not physical, it is mental. The manifestations, of course, are physical, but the seat of the disease of stammering is hidden. Its manifestation may be observed in the inability to perform any muscular action. Those who play the piano may stammer in their endeavors, even when the music is thoroughly understood. Stammering manifests itself in certain individuals in writing, in the walk of some, in the singing of others. Most frequently, however, it is an affliction manifested in the organs of speech.

Therefore, as stammering is the inability of mind to control muscular action, I claim that breathing exercises are beneficial in the treatment of the disease because they discipline and thereby establish the ability to control wherein the stammerer is deficient.

#### BREATHING EXERCISES.

In the observance of any rules laid down for exercising the will, the stammerer should continually keep in mind the fact that the purpose sought is control rather than development, and this applies especially to breathing exercises. The mind should be constantly centered upon one thing, that each physical movement is obedience on the part of the muscles to certain commands that are given; that the mind is master and that the muscles must obey. Standing in an erect position, with the palms across the upper chest, the student may exercise chest breathing. Let him inhale slowly through the nose, expanding the body under the hands. Having repeated this exercise a number of times he may now practice costal breathing, expanding the body beneath the

arm pits. In this exercise the walls of the sides should be pushed outward and upward without elevating the shoulders. We may now inhale, forcing out the muscles of the back. In this exercise the hands may be placed on the back, thumbs forward, the back of the fingers covering the dorsal muscles. He should be careful not to bend the body in this exercise, otherwise it is difficult to note whether there is expansion and contraction under the hands. This may be termed dorsal breathing. Let him now practice abdominal breathing, forcing the abdomen out as much as possible during inhalation and allowing the muscles to contract as much as possible during exhalation. Diaphragmatic breathing may be practiced, in which exercise we inhale with a view of forcing down the diaphragm, expanding the entire circle of the waist. He may practice full breathing, exercising the will simultaneously over all the muscles brought into action in the previous forms of breathing. Effusive breathing next engages his attention. This is a natural emission of the breath on the sound of the letter h. Expulsive breathing may be practiced, in which is demanded a gradual and forcible expulsion of the breath on the sound of the letter h. Or he may practice explosive breathing, suddenly exploding the breath on the sound of the letter h.

In practicing these exercises each one should be repeated a number of times before the pupil passes to the next. One thing he should remember, and this thought should be frequently emphasized: that the purpose sought for is control. Let him construe the exercises in various ways, practicing in calisthenic drills, inhaling through a number of counts and exhaling in the same manner. He may also practice while walking, inhaling and exhaling during a certain number of steps. Thus, while he is out of the institution, as also during the time he is under the observation of his teachers, he can, through self-effort, aid in disciplining the muscles concerned in breathing until he is finally able to control them under all conditions.

#### VOCAL EXERCISES.

Vocal exercises may now be practiced, the student keeping in mind constantly that control and not development is the object sought. Stammerers are not lacking in vocal ability, the majority of them having voices as strong as persons of normal speech. What they do lack, however, in this respect is the ability to control their voices, as is evidenced by the fact that under certain conditions many of them are wholly unable to vocalize or to utter a word. I have known hundreds of stammerers who possess powerful, deep resonant voices, yet who were at times totally unable to speak because under certain conditions they lacked the ability to produce voice. In other words, they were

entirely unable to control the muscles and organs concerned in voice production, and it is with a view of establishing this ability of control rather than of cultivating the voice that vocal exercises in connection with methods for the cure of stammering and stuttering, should be practiced. Any good system of vocal exercises will suffice and will accomplish the object sought for if practiced regularly and faithfully, but the following are suggested as especially applicable for the cure of stammering and stuttering.

Vocal exercises hold an important place in a beneficial course of treatment. The voice should be so exercised as to give freedom and right direction. "The primary sound of the larynx is short 'a' or approximately this sound." Each vowel sound requires a nice adjustment of the vocal organs.

Care should be taken to assume a correct standing position before any vocal practice is attempted. The logical order of practice is that of physical exercises, then the specific breathing exercises, and last the voice work proper that the system may be at its best when the vocal work is undertaken. Give the vocal organs proper position that there may be a maximum of result with minimum of effort. Open the throat and protrude the lower jaw somewhat that the sounds may have ready egress. Then utter the sounds of the vowels, a, e, i, o, u, in a natural tone of voice. Variations of this exercise may be formed by combining the various consonants with the vowels, eg, la, le, li, lo, lu; ma, me, i, mo, mu. Each new combination of sound should be accompanied by renewed effort, to impart the quality of the sound.

The utterance of the vowels, with full force, calling upon the diaphragm to enforce the sound, is another step in progress. This practice should be undertaken with moderation. Otherwise the vocal apparatus may be overtaxed by too great effort at first.

The next step in vocal exercise may be that of commencing a vowel sound in the natural tone of voice, which is gradually swelled to full force, which is decreased to natural tone, then up again, thus alternating the natural tone with full force, five times upon each vowel sound.

Sound each vowel, pouring forth the tone, letting it flow gently through the vocal passages. Follow this by the practice of vocal sounds emitted by a forcible stroke of the abdominal muscles, allowing the sound to subside gradually. In this exercise the chest should be well expanded. Aim next at the production of clear, sudden vowel sounds, which are so uttered by a vigorous abrupt action of the abdominal muscles upon the diaphragm.

Variety of practice which increases vocal power may be had by beginning the sound of each vowel with slowly emitted breath,

increasing to full volume, diminishing by degrees, thus producing a swell. Exhale all the air through the mouth; fill the lungs to their fullest capacity, inhale through the nose, then sound each vowel with a firm, steady tone, terminating abruptly. Caution is required in this practice that the muscular system may not be overtaxed.

By a tremulous movement of the chest muscles utter each vowel sound with tremor, prolonging the sounds.

In conclusion, take a deep inhalation and concentrate extreme force upon the utterance of each single vowel. The climax should so represent the height of vocal effort that the same result cannot be produced without renewal thereof.

The stammerer must be in the highest degree faithful to this practice and exert his mind upon each exercise to reap the fullest results, otherwise he becomes an automaton making little advance from mediocre. The conscientious student focusing his mind upon every detail of this vocal practice may reap untold benefit.

Many other exercises could be mentioned, but this will give some idea of the variety. Throughout the study every opportunity should be taken to establish right ideas of true tone *values*.

There are, of course, numerous other things to be considered in the treatment of stammering and stuttering in addition to the exercises which I have endeavored to illustrate for you, yet these are important, and if carefully followed will aid materially in establishing the equilibrium of control, which in stammerers is apparently lacking. A knowledge of the elementary sounds of the language and of the correct positions of the organs of articulation, together with practice in forming sounds, both singly and in combination, will also aid in giving the stammerer better control, and this I would advise every one thus afflicted to acquire.

Methods for the cure of stammering as applied in the ideal institution in actual practice are much more comprehensive and complete than I have outlined for you, my purpose in this paper being to show the relation only of one feature of our work to the cure of the malady, viz.: Physical and Vocal Exercises. Our work embodies many other features equally as important, although none receive closer attention. Six hours daily are set aside for class instruction, in addition to which every pupil receives daily such special private instruction as is necessary.

In closing, I would say that progressive institutions welcome the advancement in physical culture, for every facility which bring the man physically nearer to a condition of nervous poise and equilibrium is bringing nearer that fine indispensable correlation of mind and muscular action which is indispensable to him who would be free from stammering or stuttering.

THE PLACE OF THE NORMAL SCHOOL IN THE COR-  
RELATION OF PHYSICAL EXAMINATIONS  
AND PHYSICAL EXERCISES IN PUB-  
LIC SCHOOLS.

WM. W. HASTINGS, PH.D.

The discussion of correlation of any two facts, forces, or methods of work demands a thorough initial understanding of what is involved in each. By reviewing briefly the general scope of physical examinations and physical exercise in public schools, it may be possible to determine more clearly their relationship and the agencies which are to be held responsible for their rational extension.

THE PLACE OF PHYSICAL EXERCISE IN PUBLIC SCHOOLS.

Is physical exercise an essential factor in education? Every well-informed teacher must answer in the affirmative, for the reason that organic vigor is recognized as the most vital ground for success in the business and professional world. Our greatest men, as a rule, have great bodies. This vigor has been the product of the vigorous games, the hard physical labor and other hygienic conditions of country life. The most successful men, the leaders in commerce, science and religion are either from the country or one generation removed from the country. Our effort in cities must be to approximate as closely as possible those country conditions which are wholesome, those which tend to produce this vital and nervous reserve force. The annually increasing tendency to congestion of population in cities compels the adoption of some effective substitute for this vigorous country life. Josiah Strong, in the "Twentieth Century City," says: "From 1880 to 1890 urban population in the United States increased 61 per cent., while rural population increased 14 per cent., and 10,063 townships, 39 per cent. of the whole number in 1880, actually lost population. Thus, Chicago actually more than doubled, while 792 townships in Illinois were depleted."

It is not assumed that physical exercise is the only condition of health which country life supplies, but that it is one of the most vital. Better air and more sunshine must be secured in cities by more sanitary construction of tenements, by more and larger parks, by extension of suburbs through electric railways; better nutrition must be assured through popular education as to food values; more rest and sleep is just as essential to organic



vigor, but who has found the secret of teaching conviction of its necessity to these hurry-cursed myriads; there is need for more recreation and relaxation through school and city playgrounds, parks and public baths, winter and summer; and for the study of the simplest laws of health through courses of hygiene adapted to children.

The general effects of systematic physical exercise rationally supervised have warranted its introduction into public schools. History sustains the policy by the national example of Greek perfection of mind and body. Modern science sustains it by demonstrating that defects in posture and in muscular function may be corrected, that energy may be economized and muscular strength may be increased, that organic vigor may be secured by the use of exercise adapted to these several ends. It has demonstrated also that the physiological basis of brain development lies in good food, rest and exercise during infancy, childhood and adolescence; that texture of muscle affects texture of thought—strong, sinewy muscles are necessary to strong, sinewy thinking; that there is a physical basis of mental efficiency, and that sound ethical and religious ideals have their roots and find their strongest support in a sound, healthy organism, capable of normal living.

Is there any prevailing system of physical training? When the whole field is looked over, this question must be answered in the negative.

Is there any system which merits to prevail? If the meaning of the question is, should any system be adopted, as a whole, exclusively for public schools, we are compelled to answer in the negative. There are certain features of some systems which ought to be introduced into every public school, and certain underlying principles which are emphasized by these systems which ought to form to every physical director an inspiration for the prosecution of the line of work for which the system stands. The emphasis of special principles of physical training is the factor which has given rise to separate systems.

What has been the advantage of the specialization which has produced these various types of exercise? Without doubt we are all greatly the gainers by the extreme emphasis of these diverse lines of work, in the fact that well defined lines of demarcation have existed and that able men and women have given their best effort to the full development of these various types of exercise. To Ling and to Jahn alike is due a lasting debt of gratitude. They and some of their followers have been cranks, if you will, in the defence of their principles, and the result is that we have definite results from their work, whose value and limitations it is possible to define and to classify. All honor to the enthusiasts who swear by their systems and even cordially despise

the ignorance of the rest of us; but there is a higher thing than this. Has not the time come for rational eclecticism?

May we not all have a part in the future of physical training by supplying some feature of work which is best adapted to gain some particular physiological, developmental or educational end? We must reach the same conclusion which is now pressing upon all educators, that subject matter and method of teaching cannot be ironclad, that the chief end of education is not to make the individual conform, but to conform the education to the individual; that the primary object of education is the development of individual character, and that the secret of such development is—adaptation. General drills and classes owe their existence largely to necessity, to economy, to practicability rather than to desirability; and yet there are some things which must be taught to all and that are best taught by the group plan, for social and other reasons.

What shall guide one in this adaptation of exercise but the physical condition of the individual and the character of the exercise available for his case? It is not possible to give exercise intelligently without an intimate knowledge of the physiological and developmental effects of each type of exercise.

How can these physiological and developmental effects of exercise be estimated? By individual observation? But this is a variable quantity, often biased by personal prejudices and motives. By careful statistics gathered by independent observers, unprejudiced and incapable of collusion. But how scant are such statistics. The most vital and immediate problem in the whole subject of physical training lies right here. Here is to be found, at once, the most important factor in the future of physical training and the most neglected. How can these effects of exercise be estimated but by the measurement of form, force and function? This leads us to the consideration of the next topic.

#### THE PLACE OF PHYSICAL EXAMINATIONS IN PUBLIC SCHOOLS.

Following much the same method of analysis as for the place of physical exercise in public schools, we are led to believe,—

That there is a necessity for physical examinations in public schools, because of their value in estimating accurately the increase in form, force and function produced by exercise, and our present most vital need is to determine through accurate measurements, tests and diagnoses, and by careful statistical work, the physiological and developmental effects of various types of exercise. Let us understand the medicine being given.

Again, because of their value to the physical director in determining the physical condition of the individual taking exercise,

there is greater need that he should understand thoroughly the physical condition of children and that he should not give heavy exercise indiscriminately, than that he should exercise the same care with adults, for the reason that children are peculiarly susceptible to all physical influences. Children of the school age are capable of being fashioned almost as we will, while men and women of the college age who are now receiving this most intimate and careful attention are practically beyond the formative period.

Because when the record of the measurements is given to children they provide a stimulus to their best effort to secure organic vigor. And because this emphasis occurs during a period when this attainment of organic vigor is possible and natural, during a period when children are most vitally interested in bigness and strength, when physical prowess is almost a matter of worship.

We concluded that there was no prevailing system of physical training in public schools. No more is there a prevailing system of physical examination. The latter is even less definitely worked out than the former. Had it been practicable to take the long list of developmental measurements used in colleges for the last twenty-five years we should now see more or less uniformity in the use of developmental forms of exercise in these schools, since the form of exercise is materially affected by the form of physical measurements. Logically, the exercise must conform entirely to the purpose and form of the physical examination else the latter is useless.

A variety of points of view have given rise to physical examinations in various cities. The type of physical examination has varied with the point of view. It has been purely scientific, contemplating the advance of knowledge along the lines of anthropology, psychology and medical pathology. It has been semi-scientific, advancing the foregoing ends, but contemplating also the securing of facts concerning the occasion of arrested physical development, of mental dullness, postural deformities arising from the school desk, etc., for the information of medical and pedagogical experts. And it has been utilitarian, contemplating the direct education of teachers and physical directors in the elemental facts, along all the foregoing lines, which afford some immediate understanding of the individual, which can be applied in some measure directly to the child himself.

One of the most elemental things which has been done from this utilitarian point of view has been the formulation of a brief, practical form of physical examination for public schools, and the provision of a series of anthropometric tables which will afford to the teacher a means of estimating very closely the status of

growth and development of each child in essential dimensions and most important physiological functions. A dozen measurements have been used, comprising height, weight, trunk dimensions, lung capacity and strength of forearm. These measurements afford some practical knowledge of organic function and vigor. Very satisfactory types have been calculated for boys and girls of various heights of each age, from five to twenty years. This provides standards of excellence to which it is possible for the individual to conform. This is a first simple step in the right direction. It benefits the physical director by providing a guide to the adaptation of the exercise to the pupil, and provides also a stimulus to the pupil himself by drawing his attention to vital needs.

The latter is the primary and most practical motive for physical examination. To the physical director and to the child himself we must look principally for the removal of the various pathological conditions prevalent. It is the better part of wisdom to lay the stress on the stimulus and guide to removal and upon the means for removal than upon the continued investigation of the pathological conditions, upon the same principle that it is better to repair leaky gas pipes rather than to continue to attempt to estimate by the metre how much extra gas we are paying for.

By all means let the good work of investigation go on along all the lines hitherto pursued. The physical director owes a great debt to the infinite patience and careful study of the scientist. Let him apply new facts in his work as the way opens for their use. In addition to these simple measurements let him ascertain some items of the personal history of the child and make a physical diagnosis as thorough as is found practicable under the conditions which he has to meet.

My plea is simply for the application to the child of the facts already known about him. Something should be found which is adapted to the average school, and gradually other forms of examination should be introduced as their value and practicability is demonstrated, first, vital physical measurements indicative of organic vigor which involve no removal of clothing, and later, the same measurements with clothing removed; vital elements of physical diagnosis along the line of postural defects, function of heart, lungs and skin, and general nutrition, and later, as it becomes practicable, a more complete medical diagnosis; vital questions in personal history with reference to heredity and environment included under occupation of parents, nationality, family diseases, personal physical labor and recreation, and later perhaps, other desirable information; such psycho-physical tests as those for eyesight and hearing, and later, other sensory and motor tests when instruments reach such a stage of perfection

as to render the observations both practicable and valuable; such anthropological measurements as have a practical value to teacher and child—height, weight, breadth, depth and length of trunk, and later, all measurements which have any significance in the demonstration of evolutionary changes.

My appeal is not for a lessening of investigation but for a change of direction of some of this investigation toward the solution of the problem of the value of different types of exercise. More is known of the physiological condition of the child than of the physiological and developmental effects of exercise. There is need of more general distribution of problems which demand investigation. The few experts who have been working along special lines should multiply themselves each by a hundred and put the ordinary rank and file of us to work. We are willing enough to have our work count, we simply require sympathetic direction.

Let us begin with the simplest things, not with the complex, with the positive, not the negative, with the preventive and formative rather than the curative. There is room for a thousand or more of us to labor in this one effort toward the intelligent correlation of physical measurements and physical exercise. A large group might be working upon the physiological and developmental effects of games and sports, another group on the effects of military drill, especially the manual at arms, and so on to the end of the list. The results should be tabulated periodically at intervals of three months or six months by a central committee. This would not prevent individuals from working on any problems they chose, but would encourage co-operation and comparative statement of results. Such a committee might be appointed by the Society for Research in Physical Education to outline topics for investigation representing the various phases of scientific interest involved, to suggest methods of research, to solicit the necessary co-operation and acceptance of responsibility for individual problems, and to assume the general advisory direction of the whole matter. Or a committee for each problem might be located severally in the various Normal Schools of Gymnastics and in the more important State Normal Schools. The responsibility for the appointment of these committees might reside in the national sections of the A. A. A. P. E. Or better still, the essentials of both suggestions might be combined, and a central committee appointed by the Society for Research in Physical Education might assume general supervision of the whole matter and secure the acceptance of problems by individual Normal Schools of Gymnastics and by the larger State Normal Schools.

This plan would accommodate itself admirably to the present

conditions and form a means of transition to something better. Various types of exercise are in use in different localities. Let observers in these various places use a common test of the physiological and developmental effects of the type of exercise in use, being careful to observe the nature and number of the exercises, the exact amount of time devoted to this training and the local hygienic and social conditions, in order that data may be compared only with data secured under like conditions.

#### CORRELATION OF PHYSICAL MEASUREMENTS AND PHYSICAL EXERCISE.

This correlation is indispensable, it is practicable. The question of doing is largely one of agencies and organization.

The principles governing adaptation of exercise to the individual, formulated so far, are largely for adults. They are largely theoretical and experimental and not absolute. Much remains to be proven. They have been advanced largely by solitary individuals from a limited point of view.

The desired results can be secured through the co-operation of superintendents, principals and physical directors of city schools. These people assuredly have the best of opportunities. They complain of lack of time, but more seriously of lack of physical training of teachers. This brings us to the most vital issue in the whole matter.

The physical training in public schools must be given largely by teachers, under the supervision of a physical director. The measurements must be made in the same way in order that the teacher may understand as much as possible about the physique of the child which she is attempting to improve. One of the serious difficulties is lack of time, but this can be remedied by the school board. Lack of accuracy in observation, lack of knowledge of the laws of growth and development, lack of discrimination as to the physiological value of various forms of exercise is more serious. These deficiencies can only be remedied by correct training. On the other hand the advantages in favor of this close touch with the physical by the teacher are that she learns to observe the physical basis of effective class-room work, her observation of that which is vital in education is quickened and the child is revealed in his entirety, the bond of sympathy between teacher and child is strengthened and discipline rendered simpler by this physical contact, and the organic vigor of the teacher herself is increased by this necessity for daily relaxation and systematic exercise.

Where can the teacher get the necessary training? In most cities they are getting training in days' orders of gymnastics from

the physical director, according to the method prosecuted so successfully for many years in Kansas City by Karl Betz. They have obtained instructions for the taking of physical measurements locally as well. A good example is to be found in the work of Dr. Porter in St. Louis. Teachers already in the work may learn simple measurements through physical directors, superintendents, principals or any accurate and expert examiner in charge. They may learn through literature something of the matter, but evidently, in order to do the best service, they should be trained to physical work in State Normal Schools.

The final solution of the whole matter rests largely with the normal school. Our latest and strongest need is for teachers with more organic vigor and with more and better training for the stimulation and development of this same element of success in the children whom they teach. Overwork and undue mental strain, which exists in many normal schools as well as colleges, is a double headed evil. Undue mental strain is peculiarly disastrous to young women. It not only destroys the vital energy but tends to break down the reserve of nervous force and to destroy the idealism. It saps the heart of enthusiastic, sympathetic teaching. The children therefore suffer in the end as well as the teacher. Practical physical training and the underlying principles of the subject ought to become an integral part of every normal school course. By this plan the health of the teacher is conserved, and she is prepared also to teach ordinary physical exercises prescribed by the director.

The normal school should afford, if possible, room for specialization along the line of the physical directorship for at least one and possibly for two years. Students so trained might be used for assistants to the city physical director, or if they desire to complete their course in some reputable Normal School of Gymnastics they could be credited with amount of work covered. Our present gymnastic schools, if filled to their utmost capacity, will be unable to keep pace with the demand for physical directors during the next ten years.

Through the model or practical school also the normal school can be of greatest practical service in the solution of this matter of the correlation of physical measurements and physical exercise. The practice school is, or should be, not only a place where the most advanced and approved methods of teaching are demonstrated, but also a laboratory for the study of the real atmosphere of boyhood and girlhood, and for the winnowing out of new facts and promising methods. It is the clearing house for advanced pedagogical ideas. In such a school it would be possible to work out details more accurately and carefully than in public schools; for if there is not more freedom in selection of matter taught:

and in method of teaching in the model school than in the average public school it is evidently a failure.

This greater freedom for investigation carries with it responsibility. The State Normal School is under a peculiar necessity of leading in this matter of the correlation of physical examination and physical exercise. The wise normal school principal must have the prophetic gift. He must not simply be a seer of truth but forecast properly movements in methods and policy in the public school. The most fatal thing to his school and to him is to be dragged by public pedagogical opinion. He must, rather, be in the vanguard of progressive thinking.

The function of the normal school is twofold: to train teachers and to discover the best methods of teaching. The function of the student in such a school is assimilation of that which is proven and the solid investigation of that which remains to be proved. This question of the adaptation of exercise to different types of individuals is one of the most vital which confronts the modern city school. It demands solution. The State Normal School must ultimately accept the brunt of the responsibility for the solution of these problems of physical training.



## PRESENT STATUS OF ATHLETIC GYMNASTICS AND GYMNASIUMS.

MR. JAMES E. SULLIVAN,

Secretary of Amateur Athletic Union.

There has been rapid increase in the interest in gymnastics in athletic clubs throughout the United States during the past twenty-five years. The interest has not increased the same as it has in track and field sports, owing to the fact that those who are interested in athletic club life claim that the work has not been as pleasant as other features of the athletic club work, and men who have followed athletics during these twenty-five years saw at a glance that it required much persuasion to interest the younger element in taking what might be considered a regular course in gymnastics.

The younger element, in many cases, preferred some other form of exercise to the class work in the gymnasium, and when they used the gymnasium, it was to take to the work in their own (peculiar) way and class work was considered monotonous.

The large number of men in our athletic clubs who take gymnasium work now have no doubt been attracted to the gymnasium and to its work principally by the game of basket ball and other games of that nature that have given to them a certain amount of athletic exercise of the competitive character, and made it a pleasure at the same time. These men naturally turn to the apparatus before and after a practice game of basket ball, and as a result many are now members of the gymnasium class owing to the pleasant way they have been introduced to it.

The records show that the first legitimate athletic club to install a gymnasium in the United States was the Olympic A. C. of California. Its gymnasium was built in 1862. In the Metropolitan district, the first athletic club to have a gymnasium was the New York Athletic Club, using Mear's gymnasium in 1868, getting their own later. Prior to the erection of such buildings as the New York Athletic Club in 1885, Manhattan Athletic Club, Chicago Athletic Club, Athletic Club of the Schuylkill Navy, Boston A. C., Columbia A. C. of Washington and several others, the gymnasiums in our athletic clubs were primitive affairs. These clubs that I speak of, having erected

very valuable buildings, naturally devoted much space to the gymnasiums, and the cost of the apparatus was in proportion to the rest of the structure.

The Amateur Athletic Union is the governing body of athletics in the United States, and as such is the recognized head of the competitive gymnastic interests of the country. The colleges control their own gymnastics through their own association; the Young Men's Christian Association theirs, and the Turners theirs—and they manage them well.

The last statistics furnished by the different clubs of the associations of the Amateur Athletic Union are very interesting. Ninety-two clubs filed their statistics. These clubs are situated in all parts of the country, and their reports show that eighty-four gymnasiums are maintained by these clubs, that the cost of athletic apparatus is \$219,582; that these clubs have enrolled three thousand nine hundred and thirty-one gymnasts. This is much greater than the actual number of competing athletes that we had in America in 1879, and is one-third of the athletic membership of these clubs. The total membership of these clubs is thirty-eight thousand eight hundred and eight, therefore the gymnastic element is well represented.

These clubs have held sixty-nine gymnastic competitions, another indication of the growth of gymnastics, for it is a well-known fact that it is only within the last twenty years that we have records of any organized attempt to hold gymnastic competitions open to all amateurs.

The statistics show that these athletic clubs having gymnasiums hold one hundred and forty-three class sessions a week; at these class sessions sixteen hundred and sixty-eight men participate. Fifteen athletics clubs admit juniors to the gymnasium privileges at stated periods, which is decidedly a step forward.

It was in 1885 that the athletic clubs of the country, realizing that gymnastics had attained a position of prominence, decided that a national meeting should be held to select the champions of America. The championship meeting was instituted in that year under the auspices of the then existing governing body, the National Association of Amateur Athletes of America, and during the seventeen years of its existence, fifty-two of the championships have been won by men who represented athletic clubs, twenty-seven who represented the Turn Verein and six who represented Young Men's Christian Associations. Other organizations, such as boat clubs, etc., were represented by four winners.

It is particularly noticeable that the all around gymnastic championship of America that was organized in 1897, has been won each year by a representative of the Turn Verein. The

side horse championship each year has been won by a representative of the Turn Verein, and the same can be said of the long horse, only one year having gone to a competitor other than a Turner representative.

In the other events, such as rope climbing, club swinging and the rings, the Turners fared very badly, only one Turner scoring first in the rope climbing. The club swinging championship was won one year by a representative of the Turn Verein, and the suspended rings has never been won by a Turn Verein gymnast. It is only fair, however, to state that many of the gymnasts who won early championships for athletic clubs, were products of the Young Men's Christian Association, notably the Twenty-third Street branch, New York City.

While the above statistics show the condition of gymnastics in the parent body of athletics, it is no true report of gymnastics in athletic clubs, as we understand the term, for there is in the United States hundreds of small athletic clubs that are not members of the Amateur Athletic Union, but who recognize its jurisdiction. These are small clubs that are located in nearly every city of any importance in the United States, and they all have their so-called gymnasiums with apparatus that cost from \$15 to \$300, and I know of one local concern in the city of Chicago that sold during 1902 to athletic clubs fifty gymnasium outfits, prices ranging from \$25 to \$800, and no doubt there is \$100,000 spent per year by small athletic clubs alone for gymnasium apparatus of some kind. One retail store in the City of New York during 1902 supplied seventy gymnasiums, these gymnasiums costing from \$15 to \$200.

Statistics from this class are hard to obtain, because the history of these smaller athletic organizations show they were started by a few interested men for athletic purposes and were short-lived, and before they were known or located they were out of existence. Wherever you can locate an athletic club, be it large or small, you are sure to find a gymnasium or gymnastic apparatus of some kind.

There are thirty-seven clubs that employ gymnastic instructors. The total valuation of athletic club property owned by the A. A. U. clubs of the United States—not leased or rented property—was, in 1897, \$5,368,350, and no doubt since this report has been filed there has been easily invested in club property a million dollars more. The clubs of the Union were asked the amount of money invested in gymnasium and athletic apparatus; this would naturally include nine-tenths of its gymnasium apparatus.

Following are the figures submitted by the clubs:

New York Athletic Club.....	\$2,500
German American A. A.....	1,000
National Turn Verein.....	1,000
Union A. C.....	1,000
New Polo A. A.....	1,000
Hollywood Inn A. A.....	1,500
National A. C.....	1,500
Brooklyn A. C.....	1,000
47th Regiment A. A.....	3,000
74th Regiment A. A.....	3,000
Central Turn Verein.....	1,200
Pastime A. C.....	1,500
Boston A. A.....	10,000
Baltimore A. C.....	4,300
Athletic Club of Philadelphia.....	2,000
Vesper Boat Club.....	3,500
Milwaukee A. C.....	5,000
Columbian Knights.....	5,000
First Regiment A. A.....	1,000
Southern A. C.....	8,000
Pensacola A. C.....	1,200
Bingham A. C.....	1,000
Nashville A. C.....	1,200
Gaelic A. C.....	2,000
Denver A. C.....	5,000
St. Louis University.....	3,000
Total.....	<u>\$61,400</u>

Athletic grounds are maintained for outdoor purposes by the following A. A. U. clubs:

ATLANTIC ASSOCIATION.

Athletic Club of Philadelphia.	Court Olympix No. 72 For-
Vesper Boat Club.	esters.
Catholic Young Men's Arch-	Banks Business College.
diocesan Union.	National Swimming Associa-
Xavier Catholic Club.	tion.
Athletic Association of Bethle-	Burlington Templars A. A.
hem Presbyterian Church.	

CENTRAL ASSOCIATION.

Y. M. C. A., Cincinnati.	First Reg't Athletic Associa-
Milwaukee A. C.	tion.
Pullman A. C.	

## METROPOLITAN ASSOCIATION.

National A. C.	Norwegian Turn Society.
17th Separate Company.	Hollywood Inn A. A.
Avonia A.C.	New Polo A. A.
Shamrock Harriers.	Union A. C.
Brooklyn A. C.	National T. V.
Catholic Club.	Boys' Club.
Greater New York Irish A. A.	German-American A. A.
Grace A. C.	New York A. C.
Mott Haven A. C.	Valencia Boat Club.
Mohawk A. C.	St. George's A. C.
Star A. C.	Warlow A. C.
West Side Branch Y. M. C. A.	Warren A. C.
Xavier A. A.	Anchor A. C.
Pastime A. C.	

## NEW ENGLAND ASSOCIATION.

Roanoke S. & A. C.	Melrose A. C.
East Boston A. A.	Boston A. A.
Father Mathew T. A. Society.	Crescent A. C.

## SOUTH ATLANTIC ASSOCIATION.

St. Leo's Gymnasium.	Suburban Club.
Baltimore City College.	Maryland A. C.
Walbrooke A. C.	Baltimore A. C.
Baltimore Swimming and Skating Club.	

## THE PRESENT CONDITION OF GYMNASTICS AND ATHLETICS IN THE NORTH AMERICAN GYMNASTIC UNION.

HENRY HARTUNG, M.D.,

Chicago.

Looking backward over a period of more than half a century, since the time of the origin of the North American Gymnastic Union, the aims and principles of gymnastics as advocated by this organization have practically remained unchanged, though in many respects the methods of carrying out these principles have undergone such alterations as were dictated by the progress of the times and consistent with local conditions and environments.

True to the maxim of our renowned Turnvater Jahn, that gymnastics must be practiced in accordance with the spirit of the age and in conformity with the conditions of climate, country and race, the system as practiced by the American Turnerbund is not identical with that of the Turners of Europe, nor does it present the same features to-day that it did at the time of its infancy, a little over fifty years ago. At that time there were only a few sporadic societies to be found, having a small number of members, mostly political exiles, who had been driven from their fatherland on account of their political and social ideals, and adherence to their gymnastic principles. In this short lapse of time these few gymnastic societies have multiplied into hundreds and their membership into thousands, so that to-day there can hardly be found in any of the larger cities in this country from Maine to California, from Minnesota to Louisiana where there does not exist at least one active and thriving Turnverein. In fact, the North American Gymnastic Union represents the largest association of a uniform gymnastic system in the United States.

Although the number of those, who, scores of years ago, laid the foundation of this unique organization has dwindled down to a few dozen members, who, too, before long will have passed into eternity, the Turnerbund has rejuvenated itself partly through the offspring of those immigrant pioneers, partly through an influx of new blood from Europe, but it has also taken a firm foothold among native-born Americans and youths of other nationalities. You will find in its schools to-day thousands of children, young men and women of other than German parentage.

In spite of its numerous enemies and the manifold obstructions surrounding it on all sides, the Gymnastic Unions' own history, then, is sufficient proof of the superior vitality of its system, its great adaptability to national traits and character, and of its supremacy over inferior systems of physical training.

Rational educational gymnastics in its broadest sense is, and always has been with us, one of the main factors in the realization of higher political and social ideals; it never was practiced for selfish purposes.

In evidence hereof, permit me to quote some passages from our platform:

1. "The North American Gymnastic Union is a league of gymnastic societies of the United States of America, organized for the purpose of bringing up men and women strong in body, mind and morals, and of promoting the dissemination of liberal and progressive ideas.

2. We recognize in the harmonious education of body and mind one of the most important prerequisites for establishing, preserving and perfecting a true democracy.

3. We make it the duty of our societies to organize adult and juvenile classes, for the purpose of pursuing courses of physical culture, based on rational principles, and to further the intellectual and moral welfare of pupils and adults by establishing suitable schools and providing for instructive lectures and debates."

This clearly and unmistakably characterizes the Turnerbund as an educational and political institution in the best and highest sense of the word.

Our efforts are not limited to the mere cultivation of the body and its numerous structures and functions, but as we are strong believers in the inseparable union of mind and body, and the close relationship and mutual dependence of one upon the other, physical education furnishes us the basis for the development of the human mind in all its various faculties and the cultivation of moral perfection.

Guided by these principles and convictions, we strive for the attainment of a higher civilization; to rescue the human body from weakness, sickness and neglect, to free the mind from superstition and spiritual fetters, and to deliver mankind from social inequality, misery and dependence.

I ask your indulgence for dwelling some time on these points, which apparently have nothing to do with gymnastics and athletics, but no one will fully comprehend the efforts of the Gymnastic Union who is not, to some extent, at least familiar with the ideas from which they evolve.

In distinction from our work in the gymnasium which has more

or less appropriately been termed "physical gymnastics" (*Actives Turnen*) we designate all those efforts in the direction of mental improvement and ethics as mental gymnastics (*geistiges Turnen*). The latter is carried on in the form of lectures, discussion of questions on social, educational or political topics, dramatic performances, reading, recitations and musical entertainments. These social, as well as instructive gatherings, take place in halls or club rooms, mostly owned by the societies on specially selected evenings or days once a month or oftener, according to local conditions and the active interest of the respective members. Many of our societies maintain even regular day schools, corresponding to our public schools and ethical Sunday Schools,—others have special reading and club rooms for social gatherings and instruction. One hundred and seventy-seven societies possess gymnasiums and club rooms of their own, representing a clear valuation of property, free from indebtedness, of \$2,682,000. In almost every Turnverein there may be found a well stocked library; the number of books owned by the Turnerbund aggregates about 70,000 volumes.

In reference to having its physical work combined with mental gymnastics, the Gymnastic Union has imitated to some extent the custom of the ancient Greeks, with whom the practice of gymnastics was not limited to the work in the palæstrum; running, leaping, wrestling, throwing the discus and spear, the pancration, etc., but whose gymnasiums were also meeting places for scholars and citizens, young and old, for the purpose of discussing questions of the day,—philosophy, poetry and affairs of state.

We have even copied their ideas of the national Olympian Games, by establishing similar national tournaments (*Turnfeste*) every four years, in one of the larger cities of our country, where almost every society is represented by its best talent in competition for the highest honors which we recognize, namely: Wreaths of laurels or oak leaves.

These contests are not limited to physical feats, individual and mass exercises, but embrace mental production as well, prizes of the same character being rewarded for essays, extemporaneous speeches, recitations, singing and other musical productions.

Concerning the present condition of the work and classes in the gymnasium, the following statistics, as gathered by our Executive Council at Indianapolis, may furnish ample information on the progress of the Turnerbund.

Up to the 1st of January, 1903, there were counted in our Union 250 societies, which were grouped into 28 districts, corresponding as a rule to the geographical distribution of the States. There are enrolled 35,757 men as members, every one of whom



is either a citizen or has promised to become one as soon as he reaches maturity. Of this number 5,586 are enlisted as so-called "active members" who are regular participants in the exercises in the gymnasium. Besides these, there are 2,418 younger men between the ages of 14 and 18 called juniors (*Zoeglinge*) representing the intermediate classes between the day schools and adult classes.

As a unique feature of our organization may be mentioned the old men's classes, or *Altersriegen*, composed of men of mature age, most of them over 40 years old, who find an hour or two of judicious and well adapted exercise after a hard day's work in the office or workshop a source of extraordinary pleasure and refreshment. Of these we count at present 2,041 members. The mingling and social intercourse of these veterans with the younger element has proved of great value to the societies, fostering the spirit of unity and solidarity among all, subduing the overflow of too much animal spirit in the young, and by precept and example of the elders, preparing them for the duties and responsibilities of their future work for the union.

As an innovation, which proved to be a great success, the *Turnerbund* extended the privilege of its gymnasium also to women of all ages, and the great interest taken by them, the zeal and eagerness with which they availed themselves of the benefits of our wholesome bodily drills, games and exercises of all kinds, is a very promising and encouraging sign of our times, which deserves our unqualified support and appreciation from more than one point of view.

The number of ladies attending regular class work during the last year ran up to 5,368, and figuring at the rate of annual increase, they will soon have outnumbered the active male members.

All of these classes exercise evenings, usually for one to two hours, as a rule twice a week.

The pride of every prosperous and up-to-date gymnastic society is to be found in its day school of children's classes. They comprise boys and girls of all ages, from the little tots of the kindergarten to those of 15 and 16 years. They are graded according to age, bodily perfection and gymnastic skill, and usually attend the gymnasium for one to two hours, twice a week in the afternoon after regular school hours. The exercises they perform are arranged in accordance with their grades and are changed from lesson to lesson, increasing in difficulty and variety as they advance. These children attend our schools of their own free will and their parents gladly pay the small expense for tuition, recognizing the great benefits obtained for a small outlay.

Over 30,000 children attended our schools during the last year, of which 18,724 were boys and 11,307 girls, 5,289 were children of other than German parentage.

Whenever the weather permits, especially during the summer season, and, wherever there are favorable environments, it is common practice for any of our teachers to take their children out for excursions into the country, woods or some park, which trips are greatly enjoyed by every one.

To carry out some special features of our gymnastic work to a higher perfection, or to advance some physical or mental work, in which it is impossible for all members to participate, there have been organized in many societies special sections or clubs, which, however, are under supervision of the mother society. Such are, for instance, the fencing, sharpshooter's, swimming, bowling, singing, dramatic and women's auxiliary clubs.

The schools of our societies are placed under the leadership of large corps of teachers of gymnastics, numbering at present 184, almost all of them graduates of the Gymnastic Union's own Normal School, located at Milwaukee. To their energy and good work must be attributed much of the success and high standing of the organization, as they are men usually well qualified by nature, experience and special education for their strenuous work.

Our Gymnastic Union has maintained for quite a number of years, at a sacrifice of great expense, this normal training school, where hundreds of young men and women have been educated, not only to supply the demands of the Union, but also those of public schools and colleges.

Being the oldest institution of its kind in the United States, and up to a few years ago the only one which taught the theory and practice of German-American gymnastics, it presents in its course of instruction such a variety of subjects that it is hardly surpassed by any similar institution in this country. Since its affiliation with the German-American Teachers Seminary, by a system of reciprocity, students of the one institution may participate in the studies of the other, as to enable them to become teachers of gymnastics and elementary teachers as well.

There also exists a post graduate course for teachers of the Turnerbund where theoretical and practical work is carried on for a number of weeks during the summer vacation.

While the literature on the German system of gymnastics since the time of its inception has greatly accumulated, there had been, up to ten years ago, very little in original or translation which could be considered of practical value for use in this country. Prompted by a general demand and on special request of many American teachers, there have appeared, within the last decade,

a number of original text books on our system in the English language, adapted especially for use in the school room and for society work.

Thus, the North American Gymnasium Union has within the course of half a century evolved a system of well organized, all-around, practical training for men and women, young and old, weak and strong; adaptable to any stage or condition of life, elementary and secondary schools, athletic clubs and military institutions. Becoming more and more known for its superior qualities in regard to abundance of material, its great adaptability to various conditions and purposes, and its sound, logical and pedagogical principles—it has extended its domain, gradually farther and farther, and the better it comes to be known, the more it will be appreciated. It has been more influential in introducing physical culture into the public schools of most of our large cities than any other of the real, imitation or quack systems. Time will not permit to enumerate all of the cities where it has found a place in the curriculum of the public schools. I will only mention Chicago, St. Louis, Cincinnati, Kansas City, St. Paul, Davenport, Denver, Indianapolis and San Francisco as a few representative places.

Speaking of the condition of athletics in the North American Gymnastic Union, I may state that our system of training includes all those wholesome and invigorating manly sports and games which we consider indispensable to an all-around development of body, mind and character, especially for our young men, as: Boxing, fencing, wrestling, swimming, rowing and all the other manifold forms of field work and ball games—but you will not find us practicing *one* kind of exercise, or *one* part of our anatomy, at the expense of another, or that we favor in our instruction one individual or number of individuals for satisfaction of their ambition or vainglorious ends, to the exclusion of the others and the detriment of the class.

Let me assert emphatically, however, that our organization stands to-day, as it always has, an enemy to that kind of athletics which has been robbed of its educational and elevating features, which is characterized by one-sidedness, cultivation of monstrosities of abnormal development, professionalism and commercialism, brutality and selfishness of the lowest kind.

Physical culture, gymnastics in its ideal sense, has for its interpretation the building up of the human body to its highest degree of symmetry, beauty and perfection; athleticism stands for cultivating the animal in man, with a degradation of his higher mental and moral faculties.

Our organization has been identified with the promotion of educational gymnastics in all its various forms, and has ever

stood firm and immovable like a rock against the stream of retrograde athleticism, which is as far removed from the realization of true gymnastic ideals as the Roman gladiators of olden times differed from the models and superb manhood as we find them in Greece at the time of Pericles and Phidias.

We do not care to establish world records and championships in feats of strength, six-day bicycle riding or knockout performances, nevertheless experience has proved repeatedly that our young men with their *all-around training* were not behind in winning honors and making records when pitted against *specialty trained* athletes.

Gutsmuths, in his text book on "Gymnastics for the Young," more than one hundred years ago said, in speaking of the German System:

"We are not athletes, and our youths shall neither knock out their teeth nor crush their ribs; they shall neither kill others nor wrench their own limbs. In our exercises we seek health, not its destruction; we seek strength, not the unfeelingness of the cannibal; we strive for manly sense and courage, not for unrestrained wildness and license."

These words characterize precisely the attitude of the North American Gymnastic Union towards athleticism this very day.

It would be a deplorable fact, indeed, if the present indulgence in unlimited and unqualified athletics, with its professionalism and mercenary character, should become the ruling passion in our educational institutions, high and low. Our manhood would degenerate, our gymnastic ideals would be buried, and with the hailing of the modern gladiator we would see approaching the decadence of our country.

It is our duty to counteract such retrograde athletic tendencies to the best of our knowledge and power, to stand up for the higher ideals in physical education and to educate the public to a better understanding of our work.

In this task of building up a race of strong and healthy individuals, on rational educational principles, to models of the highest human type, the North American Gymnastic Union will gladly join hands with anybody. It has stood and fought for this ideal from the first day of its existence, and it will stand by it to its last day.

## PRESENT CONDITION OF GYMNASTICS AND ATHLETICS IN AMERICAN COLLEGES.

DR. JAMES A. BABBITT,  
Haverford College.

The constantly increasing interest in physical development of every type, in college, school, club and family life, without social or class distinction; the widespread notice in magazine and daily paper; the universal attention directed to this field of work by scientific, thinking men and women—yes, and the growth, mushroom like in its rapidity, of Swaboda, Stone, McFadden and every other form of private, money-making physical enterprise, are most significant in their presage for the future of the profession we have adopted. Indeed, so manifold and confusing are the systems, that we are almost blindly carried into excess in every direction, and tenfold more important is it becoming each year that there be reached some definite uniformity of system and co-ordination of effort among physical directors and teachers.

It is for this purpose, I take it, that this symposium of reports upon all forms of physical activity has been so wisely arranged and the writer selected for the college field on account of his secretarial connection with college gymnasium directors and their work. His function is to simply and briefly state collegiate physical and athletic conditions—that is, their place, field and scope of work.

His information has been derived from personal acquaintance with his associates' work, catalogue statistics and published reports, and from general inquiry, and is rather descriptive of the work in male than in female colleges. Also the athletic side is purposely disregarded, as its working has been so widely heralded in the public press as to need no repetition here, and would necessarily bring up a question of athletic training provocative of unnecessary controversy.

The scope of work may appropriately be discussed under the following heads, arranged without relation to order of importance:

1. System of collegiate class instruction.
2. College gymnasium team, competitive and exhibition work.
3. Anthropometric examination and general physical diagnosis.
4. Individual attention, prescription of exercise and medical gymnastics.
5. System of collegiate credit (on the curriculum).
6. Director's private, scientific investigation.

1. The system of class instruction varies widely in the different institutions and apparently depends largely upon the requirements of the college or university as to student exercise. In general, progress has been made in the last two years toward a more uniform system. This uniformity is due largely to the influence of recent normal physical preparation, if not among the directors at least among their teaching assistants, and particularly has this influence been felt in the establishment of graded systems in both light and heavy work—the gymnastic progression of the German and Swedish systems.

With a few directors the complete Swedish system has been adopted, at least with special classes—these including the more serious workers among their pupils, those who will work for the good there is in it rather than the competitive superiority, and quite a large number have apparently departed largely from the cumbersome chest-weights in favor of an increased amount of free-hand work—this a modified Swedish form. The complete Swedish system has not generally been found feasible for adoption in collegiate classes, at least those of the male type, even by thorough disciples of the course, and that after faithful trial.

The particularly strict regard to form in exercise required of the German system is having an appreciable influence upon college class drill, both in light and heavy work, and doubtless here the increasing popularity of gymnastic team competition and the demand thereby created for faultless approach and finish, has been a potent factor.

In optional class and floor work, particularly by the upper classes, there has been only moderate progress, perhaps due to the increased interest in basketball, though if to this group be added the large number who, by reason of the general popularity of the present day, are pursuing various private and special forms of physical training, the total would show an appreciable annual gain.

In certain of our colleges, as in Columbia University, the class requirement has been extended to include proficiency in swimming, fencing and wrestling, and now comes the announcement by newspaper of artistic pedal instruction at Yale.

2. The college gymnasium team is gradually reaching a degree of parity with other teams in college athletic work and thereby reaching a more conspicuous public position. Indeed, in most of the colleges where such teams exist, their work is the only exhibition work of the year.

As to the question of profit and loss to the physical department, most of us are secretly doubtful, though we will admit that the training of the gymnastic team, where enthusiasm is unbounded, forms our most enjoyable duty of instruction. But the

rounded shoulders and kyphotic posture of the best apparatus performers are at least suggestive. On the other hand, their influence in the inducing of general college participation in exercise is most profound, and it is largely through their stimulation that the annual competitive championships in the various forms of heavy work are popularized.

3. As to the anthropometric physical examination, we are possibly wasting too much time in the endless routine work of an almost clerical character, and this is said without the slightest tinge of hostile criticism. Our good college gymnastic father, Dr. Edward Hitchcock, of Amherst, remarked to the writer two years ago, "Yes, Doctor, we have taken this large list of measurements long enough for statistical and average values and they should be changed now." In this connection, the Society of College Gymnasium Directors, through their committee, is making the effort to determine upon some system, less time-consuming but not less valuable, and one in which the "strength coefficient" shall play a more important part. Several of the larger colleges are giving the strength test, by inter-collegiate competition, a most exhaustive trial, upon the results and effect of which its worthy originator, Dr. Sargent, is more qualified to judge. In the matter of physical diagnosis many of us have been blinded by the close attention to the anthropometric data, and have given but passing attention to the so-called "vital examination." Enough has been said to indicate that the present methods, perhaps exhaustive and certainly exhausting, are subject to improvement, and this with a hearty word of condemnation for the painstaking compilations of the past.

4. As to individual attention of a medical gymnastic character, the average physical director has insufficient time and strength to carry out his will and desire. If he is not a physician—and the writer believes that every college director should be a physician (and his salary, by the way, show recognition of this fact)—and unfortunately belongs to the rather large class who lack the prestige of medical position, his efforts in the medical gymnastic direction are apt to prove the target of hostile medical prejudice—this largely due to professional jealousy.

However, in spite of all obstacles, special work of this kind is gaining ground, and every well-directed orthopaedic institution is adding its forward impulse. It is not improbable that the work of Dr. Lorenz in this country may have a reaction favorable to gymnastic progress.

5. The subject of collegiate credit has been admirably handled by Dr. Phillips, of Amherst (in 1901), and as the results the writer has been able to obtain, add so little and corroborate so generally the figures in his paper (which was published in the

PHYSICAL EDUCATION REVIEW of that year) that further discussion would be futile. He has reported that about 65% of our colleges, as far as information was obtainable, required physical exercise, and about 20% give absolute credit for the same upon the diploma. General reports upon college curricula show this percentage to be increasing and largely due to the recognition by college authorities of the physical director's scientific ability.

6. Perhaps most gratifying progress of all will be shown in the field of scientific investigation. From physiological and psychological laboratories all over our land come reports of new and interesting, yes, valuable research work performed by physical education investigators. Most suggestive is the formation this month, under the leadership of Drs. Fitz, Sargent, McCurdy and others, of a society for research investigation, with headquarters in Boston, with high membership dues, which is to require annual reports from its members of original work done.

The scientific work done by Drs. Fitz, Gulick, Anderson, McCurdy, Hastings, Sargent, Storey, Wood, Raycroft, Messrs. Davis, Hetherington, Curtiss and many others, is well known to members of this association, while investigations in Cross-education, vaso-motor changes, reaction time, mental and physical co-ordination, maximal exertion, and with the muscle board, plethysmograph, sphygmograph, dynamometers, pressure gauges, vascular apparatus, etc., etc., are now matters of common report.

It will be into this field of work that we shall attract valuable scientific men and women—those who will add strength and dignity to our profession.

It will be seen that the writer's views are clearly optimistic, but it must be admitted that remarkable strides have been made in the last few years, and we trust it will not be long before the crying collegiate appeal will be answered and a definite American system of gymnastics will be established, uniform in course, apparatus and nomenclature—and associated with a simple, adequate and universally adopted plan of physical examination.



## THE PRESENT STATUS OF PHYSICAL TRAINING IN THE YOUNG MEN'S CHRISTIAN ASSOCIATIONS.

GEORGE T. HEPBRON,

International Committee, Y. M. C. A.

### PHYSICAL TRAINING CONFERENCES.

International conferences for those interested in physical work have been held annually, with the exception of last year, since 1892. They are to be resumed this year. Average attendance 45.

Five annual Pennsylvania State Conferences have been held in Philadelphia, beginning 1897. Average attendance 35.

Monthly State conferences have been held in Massachusetts and Rhode Island for the past two years. Average attendance 18.

The physical directors of Brooklyn and vicinity have held bi-weekly conferences, beginning 1902. Average attendance 7.

### NORMAL TRAINING SCHOOLS.

#### *Organization—*

One at Springfield, Mass., established 1885.

One at Chicago, Ill., incorporated 1890.

#### *Length of Course—*

Springfield, 3 years.

Chicago, 2 years.

#### *Number of Graduates—*

Springfield, 83	{ 111
Chicago, 28	

The school at Springfield, Mass., issues a monthly magazine under the title of "The Association Seminar," containing 40 pages of reading matter; subscription list 400. The physical work is given equal space with other topics.

### SUMMER SCHOOLS.

The first Summer School was established by the Y. M. C. A. Training School at Springfield, Mass., in 1887. Discontinued 1891.

A Summer School was established at Lake Geneva, Wis., in

1890 by the Chicago Training School (now known as the Y. M. C. A. Secretarial Institute and Training School). This School is still in existence.

In Hamilton, Ont., under the auspices of the Hamilton Y. M. C. A., a Summer School was held in 1902.

#### ASSOCIATIONS REPORTING ATTENTION TO PHYSICAL TRAINING.

627 city associations reported statistics of their work. 472 of these reported attention to physical training, 452 through gymnasiums, and 303 through athletic games, sports and outings.

437 associations report 89,695 men using physical means provided.

125 reported swimming schools. Athletic fields reported number 103.

#### SUPERVISION, *Senior*.

There are 265 physical directors and 31 assistants, making a total of 396, with 28 vacancies.

There are about 1,325 gymnasium leaders giving voluntary gymnastic teaching.

69 Y. M. C. A. Physical Directors are members of the A. A. A. P. E. A special appeal has been sent by the Y. M. C. A. Physical Department to the others, bringing this association to their attention and urging membership.

#### ASSOCIATIONS REPORTING THE ESTIMATED VALUE OF PHYSICAL DEPARTMENT EQUIPMENT.

189 report	\$196,041	Gymnasiums.
162 "	91,271	Baths.
35 " "	85,525	Swimming Pools.
163 "	79,811	Lockers.
59 "	34,571	Bowling Alleys.
49 "	16,427	Athletic Fields.
20 "	1,540	Outdoor Play Grounds.
	<hr/> \$505,186	

#### VACATION RESORTS OWNED OR CONDUCTED BY ASSOCIATIONS.

On Lake Geneva, Wis., and Lake George, N. Y., there are vacation resorts and conference centres for the associations (1) of the Central West and (2) of the Eastern States and Canada respectively.

A considerable number of individual Associations have summer resorts. Among them the *Boston Association* owns an island fully equipped for summer work.

The *New Haven Association* conducts summer work and has boat house and equipment.

*Worcester, Mass.*, has a boat house on a lake surrounded by large grounds, twenty minutes ride from city. Equipment 32 boats. Open 5 months, May to October. Reading room, 345 lockers, game room.

*Montclair, N. J.*, has a boat house on the Passaic River with full equipment.

*Philadelphia* has 467 acres known as "Dwight Farm." In 1902 400 men and boys enjoyed a vacation period there. \$7,000 worth of improvements were added including *six cottages and a farm house*.

*New York City* has a boat house on Long Island.

Several other associations have equipment of a similar description, but not definitely reported.

#### FINANCIAL.

One hundred and forty-two associations reported a physical department budget of \$149,240 for the twelve months.

#### ANTHROPOMETRY.

Statistics regarding the number of men examined have not been collected, but I know of no association employing a physical director that does not offer such an examination as one of the membership privileges and many make it compulsory.

#### THE ATHLETIC LEAGUE OF THE YOUNG MEN'S CHRISTIAN ASSOCIATIONS OF NORTH AMERICA.

The objects of this organization are shown in the following extract from its constitution:

"SECTION 1. The maintenance of a high standard of Christian morality, honesty, courtesy and manliness in athletic sport.

SEC. 2. The furtherance of association physical department work.

SEC. 3. The institution, regulation, and government of inter-association gymnastic and athletic meets of all kinds.

SEC. 4. The securing and maintenance of a genuine amateur basis in association sport.

#### ARTICLE III.

##### *Membership.*

Membership in the League shall consist of such Young Men's Christian Associations or branches, entitled to representation in the International Convention, as shall join this League, as provided in the by-laws.

The direction and control of the League shall be placed in the charge of a Governing Committee appointed annually by the International Committee of the Young Men's Christian Associations of North America. All the acts of said Governing Committee shall be subject to the approval of the International Committee."

#### Y. M. C. A. ATHLETIC LEAGUE AND CLEAN SPORT.

"The League endeavors to foster clean sport between gentlemen. The following statements express the spirit to be sought and maintained in such sport. It is the privilege and duty of every committee and person connected with the League to embody these principles in his own actions and to earnestly advocate them before others:

1. The rules of games are to be regarded as mutual agreements, the spirit or letter of which one should no sooner try to evade or break than one would any other agreement between gentlemen. The stealing of advantage in sport is to be regarded in the same way as stealing of any kind.

2. Visiting teams are to be honored guests of the home team, and all their mutual relationships are to be governed by the spirit which is understood to guide in such relationships.

3. No action is to be done nor course of conduct pursued which would seem ungentlemanly or dishonorable if known to one's opponents or the public.

4. No advantages are to be sought over others except those in which the game is understood to show superiority.

5. Advantage should not be taken of the laxity of officials in interpreting and enforcing rules.

6. Officers and opponents are to be regarded and treated as honest in intention. When opponents are evidently not gentlemen, and officers manifestly dishonest or incompetent, future relationships with them may be avoided.

7. Decisions of officials are to be abided by, even when they seem unfair.

8. Ungentlemanly or unfair means are not to be used even when they are used by opponents.

9. Good points in others should be appreciated and suitable recognition given."

#### THE ATHLETIC LEAGUE—ORGANIZATION.

*Organized*—In the International Convention held at Springfield, Mass., in May, 1895, a resolution was adopted directing the formation of such a League, and in October, 1895, the organization was effected.

Membership is composed entirely of Young Men's Christian Associations, and now numbers 105. The fee is \$5 per annum.

Sanctions are granted for the conduct of gymnastic and athletic meets between two or more associations. 341 such sanctions were granted during season 1901-1902.

*Registration*—A system of athletic bookkeeping was adopted Jan. 1, 1898. During the season 1901-1902 1,100 men registered by filling out a blank and paying the fee of 25 cents.

#### ATHLETIC LEAGUE.

*Executive Supervision*—The executive supervision is vested by the International Convention, through the International Committee, in a Governing Committee. The Section and State Committees are closely connected with the Governing Committee.

The Governing Committee for the season of 1901-1902 numbered 23.

The Seven Section Committees for the same period numbered 56.

Forty-seven men constituted the fourteen State Committees.

The League is affiliated with the Amateur Athletic Unions of the United States and Canada, and has representation on the Governing Board of each body.

*Records*—Great care is exercised in getting testimony from the officials who were present when the record was made.

All applications must pass the Records and Governing Committees favorably before they are accepted and entered on our files.

The following Athletic Records have been established to date:

#### Y. M. C. A. ATHLETIC RECORDS.

##### NORTH AMERICAN INDOOR RECORDS.

Standing broad jump, 10 ft. 2 in., O. H. Bonney, Aurora, Ill.

Standing high jump, 4 ft. 9½ in., R. O. Best, Buffalo (Cen.), N. Y.

Two standing broad jumps, 21 ft. ¾ in., David Lane, Bridgeport, Conn.

Three standing broad jumps, 32 ft. 11½ in., J. A. Macdonald, Melrose, Mass.

Standing hop, step and jump, 28 ft. 5 in., F. W. Foster, Cambridge, Mass.

Running high jump, 5 ft. 10¼ in., David Davies, Cincinnati, O.

Running high dive, 6 ft., R. O. Best, Buffalo, (Cen.), N. Y.

Running high jump from springboard, 7 ft. 7½ in., David Lane, Bridgeport, Conn.

Running high dive from springboard, 8 ft. 6½ in., Chas. Stewart, San Francisco, Cal.

Running long dive, 13 ft. 7½ in., Frank Zumbrook, Springfield, Ill.

Fence vault, 6 ft. 8½ in., R. O. Best, Buffalo, (Cen.), N. Y.

Running high kick, 9 ft. 3¾ in., O. H. Bonney, Aurora, Ill.

Running hitch and kick, 8 ft. 6⅛ in., D. C. Briggs, Dayton, O.

Double kick, 8 ft. 1¾ in., F. C. Crane, Aurora, Ill.

Pole vault for height, 10 ft. 7¾ in., R. W. Albertson, Chicago, (Cen.), Ill.

One-quarter mile run, (21 laps), 59 4-5 sec., E. M. Tourtelot, Chicago (Cen.), Ill.

One-half mile run, (32 laps), 2 min. 11 4-5 sec., Harold Knight, Fitchburg, Mass.

Three-quarters mile run, 4 min. 1 1-5 sec., A. T. Robinson, Chicago, (Cen.), Ill.

One-mile run, 5 min. 15 sec., Geo. Sim, Chicago, (Cen.), Ill.

Potato race, 1 min. 40 sec., J. E. Peters, Chicago, (Cen.), Ill.

18-ft. rope climb, 4 3-5 sec., R. O. Best, Buffalo, (Cen.), N. Y.

Putting 12-lb. shot, 48 ft. 9¾ in., C. H. Robinson, Boston, Mass.

Putting 16 lb. shot, 41 ft 5½ in., A. B. Gunn, Buffalo, (Cen.), N. Y.

## Y. M. C. A. ATHLETIC LEAGUE RECORDS.

### NORTH AMERICAN OUTDOOR RECORDS.

50-yard run, 5 4-5 sec., Frank Clark, Galveston, Tex.

75-yard run, .....

100-yard run, 10 sec., C. W. Svenson, Jr., Chicago (Cen.), Ill.

150-yard run, .....

200-yard run, .....

220-yard run, 23 1-5 sec., R. H. Lummis, Wilmington, Del.

300-yard run, .....

440-yard run, 52 3-5 sec., E. M. Tourtelot, Chicago (Cen.), Ill.

880-yard run, 2 min. 7 3-5 sec., Harry B. Salmon, Chicago (Cen.), Ill.

One-mile run, 4 min. 41 sec., J. D. Delany, Worcester, Mass.

Two-mile run, .....

Five-mile run, .....

120-yard hurdle, 16 1-5 sec., W. T. Fishleigh, Chicago (Ravenswood), Ill.

220-yard hurdle, 27 3-5 sec., W. T. Fishleigh, Chicago (Ravenswood), Ill.

Standing broad jump, 10 ft. 5 in., Frank Clark, Galveston, Tex.

Two standing broad jumps, .....

Three standing broad jumps, .....

- Standing high jump, 4 ft. 9 in., Frank Clark, Galveston, Tex.  
 Standing hop, step and jump, .....  
 Running broad jump, 21 ft. 11½ in., W. T. Fishleigh, Chicago, (Ravenswood), Ill.  
 Running high jump, 5 ft. 8 in., Daniel Reuss, Brooklyn, (Bedford), N. Y.  
 Running hop, step and jump, 41 ft. 7 in., C. W. Svenson, Jr., Chicago (Cen.), Ill.  
 Pole vault for height, 10 ft. 2 in., H. E. Scott, Westfield, Mass.; C. S. Dole, San Francisco, Cal.; W. B. Everingham, Chicago (West Side), Ill.  
 Pole vault for distance, .....  
 12-lb. hammer without turn, 115 ft. 1 in., H. S. Brigham, Worcester, Mass.  
 12-lb. hammer with turn, 113 ft. 1 in., A. Heatherly, Galveston, Tex.  
 16-lb. hammer with turn, .....  
 Putting 12-lb. shot, 43 ft. 5 in., H. B. Webster, Chicago (Cen.), Ill.  
 Putting 16-lb. shot, 38 ft. 2 in., W. H. Stevenson, Cincinnati, O.

PERIODICALS PUBLISHED BY THE INTERNATIONAL COMMITTEE  
 RELATING TO PHYSICAL TRAINING.

"Association Men," the official organ is issued monthly; subscription price 50 cents; contains an average of 64 pages, 4 of which are devoted to physical training; subscription list over 30,000.

"Physical Training," issued monthly; devoted wholly to physical training; subscription price \$1; contains 14 pages of reading matter of technical and practical nature; subscription list 500; editor Dr. Gulick.

"Association Boys," issued bi-monthly; wholly devoted to boys' activities; subscription price fifty cents. The first volume contained 220 pages of reading matter, 125 of these being devoted to the physical life of boys.

PRINTED MATTER ISSUED BY THE INTERNATIONAL COMMITTEE  
 RELATING TO PHYSICAL WORK.

The Physical Work of the Association. 5 cents.

The Physical Directorship as a Life Work. Luther H. Gulick.  
 2 cents.

Pentathlon Certificates. Small size, for local games. 10 cents.

Pentathlon Certificates. Large size for State games. 25 cents.

Gymnasium Nomenclature. Interleaved. 50 cents.

Association Athletic Medals for Basket Ball, Bicycling, Bowling, Pentathlon and Indoor Test; in Bronze, Silver and Gold.

Classified Gymnasium Exercises. System of R. J. Roberts, with notes. Compiled by A. K. Jones. Cloth, \$1.

Anthropometric Chart and How to Use It. L. H. Gulick. \$1 per 100.

Home Dumb Bell Drill. R. J. Roberts. 10 cents.

Marching for Gymnasium Use. A. T. Halsted. 10 cents.

Manual for Physical Measurements. L. H. Gulick. Forty-three half-tone cuts. Cloth, 75 cents.

Gymnasium Record Blanks. Small form, white. \$1 per 100; in smaller quantities, 1½ cents each. Bound half leather, 200 pages, \$2; 300 pages, \$3. Large form, white, \$1.50 per 100; in small quantities, 2 cents each. Bound, 200 pages, \$3; 300 pages, \$4.50.

Intermediate Examination Blanks, 10 cents per dozen; 50 cents per 100.

Personal History Blanks, 10 cents per dozen; 50 cents per 100.

Official Rules and Score Cards for Indoor Test, 3 cents each; \$2 per 100.

Indoor Test Certificates. 10 cents.

Notes on the Physical Department. J. H. McCurdy, 23 stenciled pages. 40 cents. Deal with construction, equipment, organization, rules, relationships, etc.

#### OFFICIAL PRIZES, EMBLEMS, ETC., OF THE INTERNATIONAL COMMITTEE.

Triangle emblems are largely used in the gymnastic and athletic classes to designate the various grades, the differentiation being shown by variety in color and size.

#### PERIODICALS ISSUED BY LOCAL ASSOCIATIONS.

Probably 100 associations issue a monthly printed bulletin, about one-eighth of which is devoted to physical training in the association issuing it.

Probably 500 associations issue annually a prospectus, in which physical training occupies about the same space.

#### BUILDINGS.

The space devoted to the physical department in the new buildings has increased until now an average of 35% of the whole building, exclusive of dormitories, is used for physical training purposes.



Some recent buildings have

	Total floor space.	Phys. Dept.
New Haven, Conn.....	62,006	25,729
New York, East Side.....	36,500	15,000
New York, West Side.....	88,340	21,950
Buffalo, N. Y. ....	83,472	32,000

#### BOYS' GYMNASIA.

Ten associations have separate gymnasiums for boys.

Philadelphia.

New York, East Side.

New York, West Side.

New York, West 23d Street.

Cleveland.

Brooklyn Central.

Buffalo Central.

New Haven, Conn.

Elgin, Ill.

Toronto, Ontario.

#### BOYS' CAMPS.

An important feature of the outdoor summer work is camping. Last season there were approximately 200 camps in which 4,000 boys camped from six to thirty days.

PRESENT STATUS OF PHYSICAL TRAINING IN  
NORMAL SCHOOLS.

DR. DELPHINE HANNA.

The following Universities and Colleges give some courses in the theory and practice of gymnastics: The Universities of Cornell, Illinois, Kansas, Missouri, Wisconsin, and Oberlin College (for men).

I was unable to get a complete report of the State Normal Schools. Of the ninety-one that reported, the following fifty-one give courses that prepare students to teach gymnastics in the public schools:

Ala.—Jacksonville.	N. Y.—Geneseo.
“ Livingston.	“ Oswego.
Cal.—San Diego.	“ Plattsburg.
Colo.—Greeley.	Ohio—Cleveland.
“ San Jose.	Penn.—Bloomsburg.
Conn.—New Britain.	“ California.
“ New Haven.	“ Clarion.
“ Willimantic.	“ Cumberland Valley.
Idaho—Albion.	“ Mansfield.
Ill.—Carbondale.	“ West Chester.
Ind.—Terre Haute.	S. Dak.—Madison.
Iowa—Cedar Falls.	Tenn.—Nashville.
Kansas—Emporia.	“ Warrensburg.
Maine—Castine.	Texas—Houston.
Mass.—Bridgewater.	Utah—Salt Lake City.
“ Framingham.	Vermont—Castleton.
“ North Adams.	“ Johnson.
“ Salem.	“ Randolph Center.
“ Worcester.	Wash.—Ellensburg.
Mich.—Mt. Pleasant.	Wis.—Oshkosh.
“ Ypsilanti.	“ Plattville.
Minn.—Winona.	“ River Falls.
Mo.—Warrensburg.	“ Stevens Point.
N. J.—Trenton.	“ Wausau.
N. Y.—Cortland.	“ West Superior.
“ Fredonia.	

DELPHINE HANNA, Oberlin College, Oberlin, O.

# SUMMER SCHOOLS OF PHYSICAL TRAINING.

LOCATION.	NAME OF SCHOOL.	When Reestablished.	Length of Course in Weeks.	NAME OF DIRECTOR.	Literary Re- quirements for Entrance.	No. of Theoret- ical Courses.	No. of Practical Courses.	No. of Teachers Employed.	No. of Stu- dents En- rolled 1902.	
									Male.	Female.
Chautauqua, N. Y.	Chautauqua School of Physical Education.	1886	6	J. W. Seaver, M. D. W. G. Anderson, M.D.	High School Diploma or Equivalent.	8	15	10 Faculty. 16 Instructors	23	55
Cambridge, Mass.	Harvard Summer School of Physical Education.	1887	5	D. A. Sargent, A.M., M.D.	High School Diploma or Equivalent.	4	4	44	40	90
Bay View, Mich.	Bay View Summer University.	1887	5	.....	None.	Mixed (Theory and Practice in same season).	1	2	40	35
Cottage City, Mass.	Martha's Vineyard Summer Institute.	.....	5	Miss Charlotte Carne.	.....	.....	1	1	.....	50
Lake Geneva, Wis.	Secretarial Institute and Training School of Y. M. C. A.	1890	4	H. F. Kallenberg, M.D.	High School Diploma or Equivalent.	9	9	8	83	.....
Boston, Mass.	Posse Gymnasium Summer School.	1890	4	Baroness Posse.	Good General Education.	5	6	2	.....	8
New Haven, Conn.	New Haven Normal School of Gymnastics.	1885	5 Med. 1 Play 4 Gym.	E. H. Arnold, M.D.	Normal School Graduates.	1	1	1	.....	11
						4	4	3		

Monteagle, Tenn.	Monteagle Summer School of Physical Education.	1898	5	C. G. Baer. A. K. Jones.	High School Diploma or Equivalent.	9	10	4	1	10
New York, N. Y.	Summer Session Columbia University.	1899	6	J. C. Egbert. W. L. Savage, M.D.	None.	Mixed (Theory and Practice in same lesson).		5	20	68
Ypsilanti, Mich.	State Normal College.	1895	6	Mrs. Fannie Cheever Burton.	High School Diploma or Equivalent.	4	4	1	....	150
Berkeley, Cal.	University of California.	1900	6	W. E. Magee.	None.	...	2	2	25	80
Ann Arbor, Mich.	University of Michigan.	1900	.....	C. T. Teetzel.	.....	.....	.....	.....	.....	.....
Madison, Wis.	University of Wisconsin.	1898	6	J. C. Elsom, M.D.	High School Diploma or Equivalent.	3	3	3	15	10
Peru, Neb.	State Normal School.	.....	.....	Mrs. E. Graham.	.....	.....	.....	.....	.....	.....
Terre Haute, Ind.	Indiana State Normal School.	.....	.....	J. P. Kennell. Miss E. M. Love.	.....	.....	.....	.....	.....	.....

# REPORT ON THE PRESENT STATUS OF NORMAL SCHOOLS OF PHYSICAL TRAINING IN THE UNITED STATES.

LOCATION.	NAME OF INSTITUTION.	WHEN ESTABLISHED.	LENGTH OF COURSE.	NAME OF DIRECTOR.	No. of Teachers Employed.	No. of Students Enrolled 1902-3.		No. of Graduates.		No. of Graduates Teaching.		Certificate, Diploma or Degree.
						Male	Female	Male	Female	Male.	Female.	
Milwaukee, Wis.	Normal School of the North American Gymnastic Union.	New York City, 1886-9- Chicago, 1871. New York City, 1872-3- Milwaukee, 1875-88 Indianapolis, 1889-91. Milwaukee, 1891.	10 months.	Geo. Wittich.	7	8	9	216	4	159	....	Diploma.
Cambridge, Mass.	The Sargent Normal School of Physical Training.	1881.	1881-1902, 2 years. 1902, 3 years.	D. A. Sargent, A.M., M.D.	20	....	74	.....	215	....	172	Diploma.
New Haven, Conn.	The New Haven Normal School of Gymnastics.	1885-92, Brooklyn Normal School of Physical Education. 1892-1900, The Anderson Normal School of Gymnastics. 1901, The New Haven Normal School of Gymnastics.	2 years. Graduate Courses in Massage and Medical Gymnastics.	E. H. Arnold, M. D.	12	2	36	6	208	6	156	Diploma.
Springfield, Mass.	The International Y. M. C. A. Training School.	1886.	3 years.	J. H. McCurdy, M.D.	15	45	....	83	....	64	....	Diploma.
Oberlin, Ohio.	Oberlin College, Normal Course in Physical Training for Women.	1886.	1886-92, 1 year. 1892-1900, 2 years. 1900, 4 years.	Delphine Hanna, A.M., M.D.	4 Special 27 from College Faculty.	....	29	1-yr. Course, 10 2- " " 35 4- " " 1	....	....	25	A. B. Degree and Diploma of Normal Course.
Boston, Mass.	Boston Normal School of Gymnastics.	1889.	2 years.	Miss A. M. Homans.	18	2	66	7	255	7	155	Diploma.

Boston, Mass.	The Posee Gymnasium.	1890.	1890-2, 1 year. 1892-7, 1 and 2 yrs. 1897, 2 years.	Baroness Posse.	High School Diploma or Equivalent.	18	2	38	11	200	11	140	Diploma.
Chicago, Ill.	The Secretarial In- stitute and Training School of Y. M. C. A.	1890.	2 years.	H. F. Kallenberg, M.D.	High School Diploma or Equivalent.	5	8	....	27	....	23	....	Diploma.
New Orleans, La.	Department of Norman Physical Education, Newcomb College.	1892.	2 years	Miss C. G. Baer.	Graduate Academic Courses.	4	....	9	....	24	....	10	Certificate.
Philadelphia, Penn.	Philadelphia Normal School of Physical Training.	1895.	2 years.	H. S. Wingert, M.D.	High School Diploma or Equivalent.	12	14	12	14	39	12	20	.....
Milwaukee, Wis.	The Burnham Normal School of Physical Training.	1895.	2 years.	Miss S. M. Burnham.	High School Diploma or Equivalent.	3	....	12	....	12	....	10	Certificate.
New York City, N. Y.	New York Normal School of Physical Education.	1898.	2 years.	W. L. Savage, M.D.	High School Diploma or Equivalent.	13	....	38	....	27	....	27	Diploma.
Berkeley, Cal.	University of California.	1898.	4 years.	W. E. Magee.	College Entrance Require- ments.	8	2	9	15	21	12	17	Bachelor Degree and Certificate.
Lincoln, Neb.	University of Nebraska.	1899.	4 years.	Raymond G. Clapp, M.D.	College Entrance Require- ments.	....	4	16	....	....	....	....	Bachelor Degree and Certificate.
Bloomsburg, Penn.	State Normal School.	1902.	2 years.	A. K. Aldinger, M.D.	High School Diploma or Equivalent.	7	8	....	....	....	....	....	Diploma.
New York City, N. Y.	Columbia University, Teachers' College, Department of Physical Education.	1903.	2 years.	T. D. Wood, A. M., M.D.	.....	....	....	....	....	....	....	....	Bachelors' Diploma in Physical Ed- ucation (as work devel- ops courses for graduate degrees will be devel- oped).

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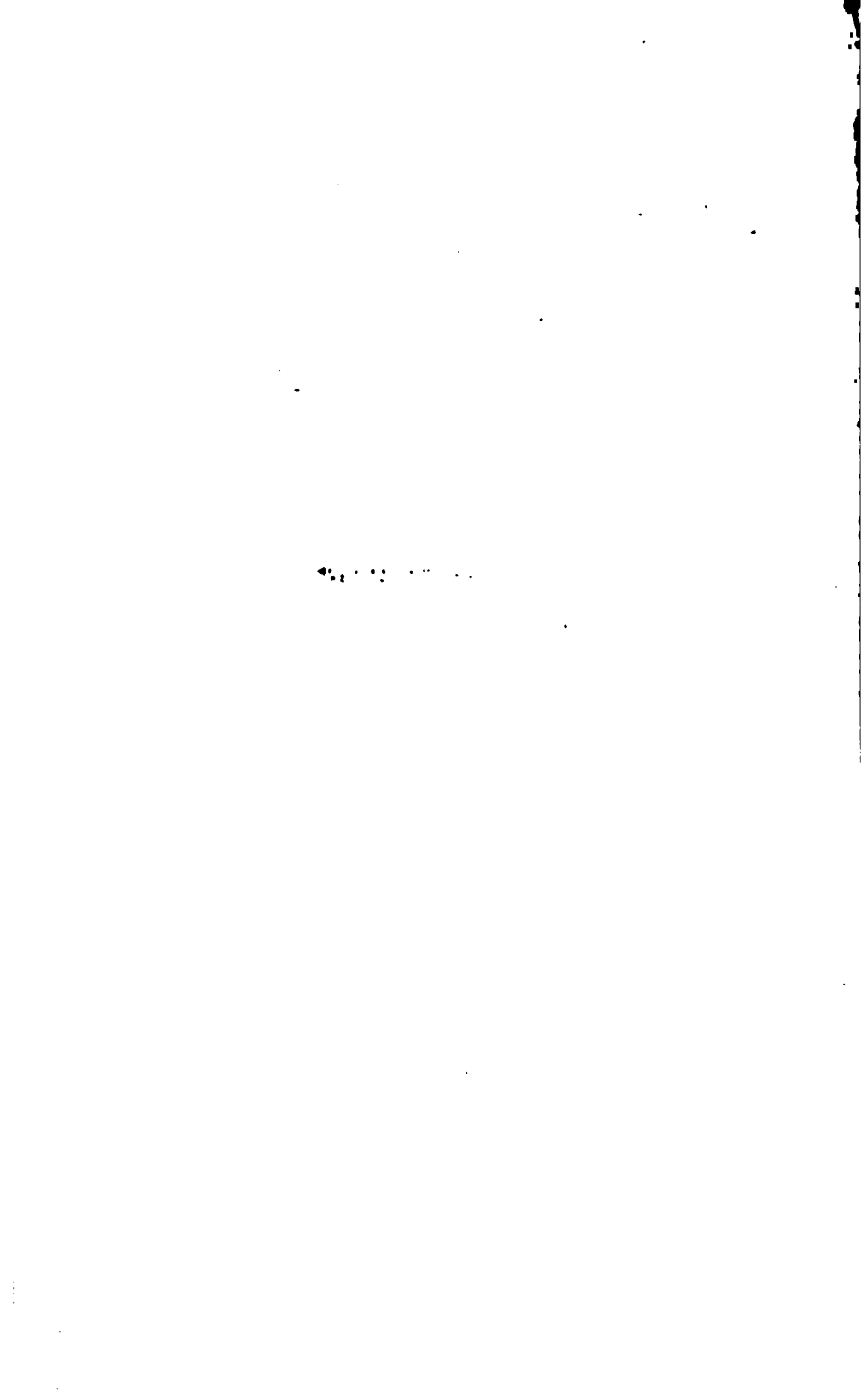
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